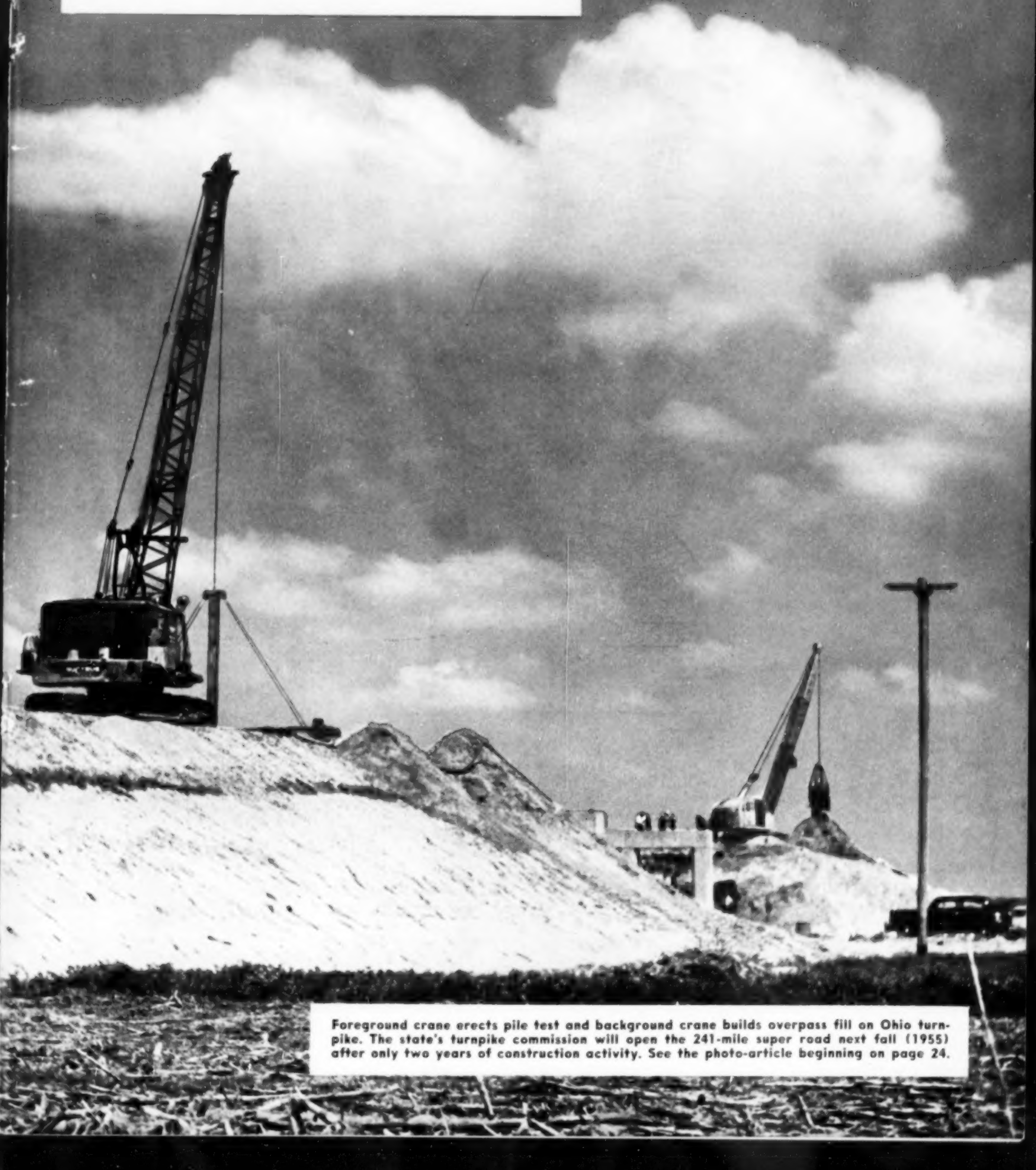
Excavating Engineer

founded 1905

SEPTEMBER
1954



Foreground crane erects pile test and background crane builds overpass fill on Ohio turnpike. The state's turnpike commission will open the 241-mile super road next fall (1955) after only two years of construction activity. See the photo-article beginning on page 24.

Bucyrus-Erie

INDIVIDUAL DESIGN

Rock, shale, dirt, gravel or sand — no matter what material you're digging or loading — you can handle it faster and more economically with a Bucyrus-Erie excavator.

That's because each of the machines in the Bucyrus-Erie ⅜- to 4-yard line is designed as an entirely separate model. Materials and construction are specified for best results in each machine's rated yardage capacity. There are no make-shift models. The size excavator you need *for your work* — that's exactly the size you get.

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72E53C

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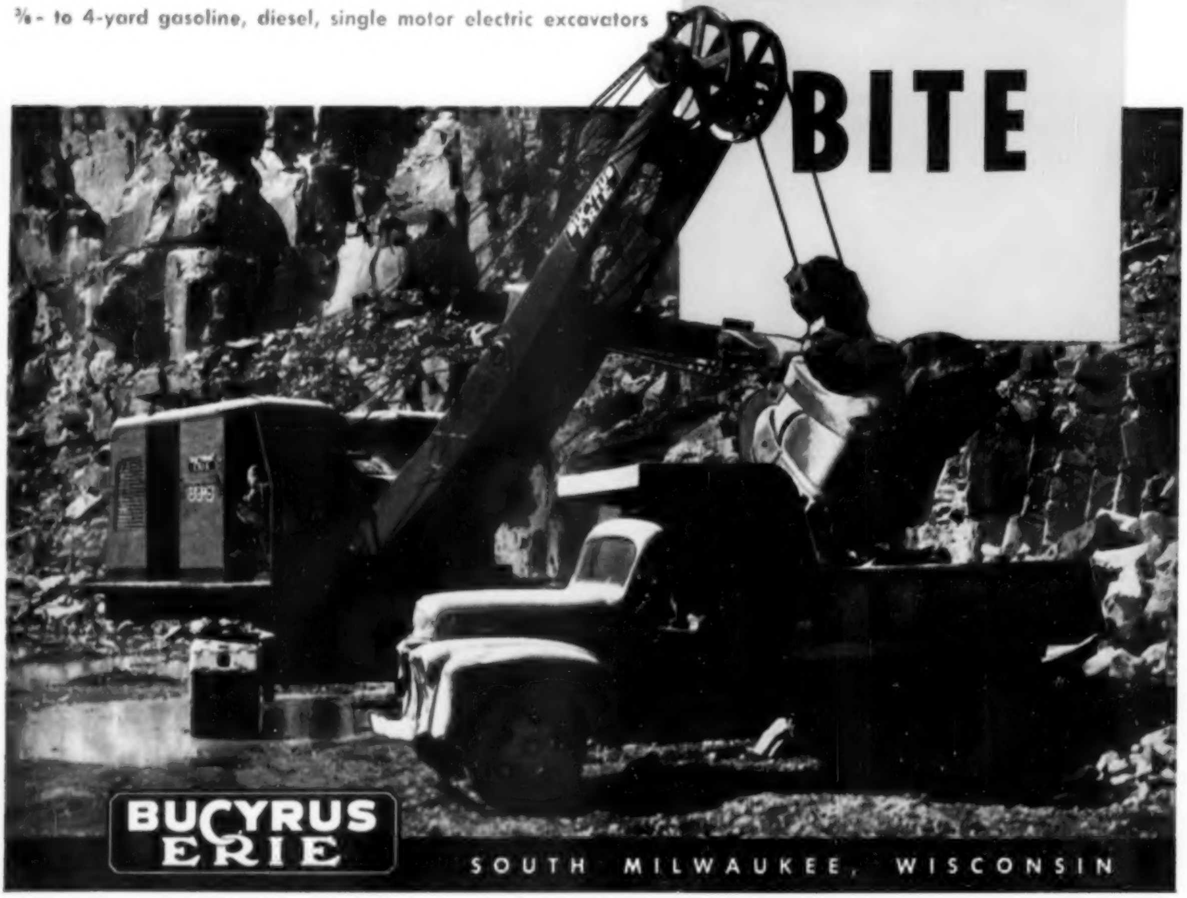

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PROFITABLE PRODUCER FOR OMAN

on the West Virginia Turnpike

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Excavating Engineer

founded 1905

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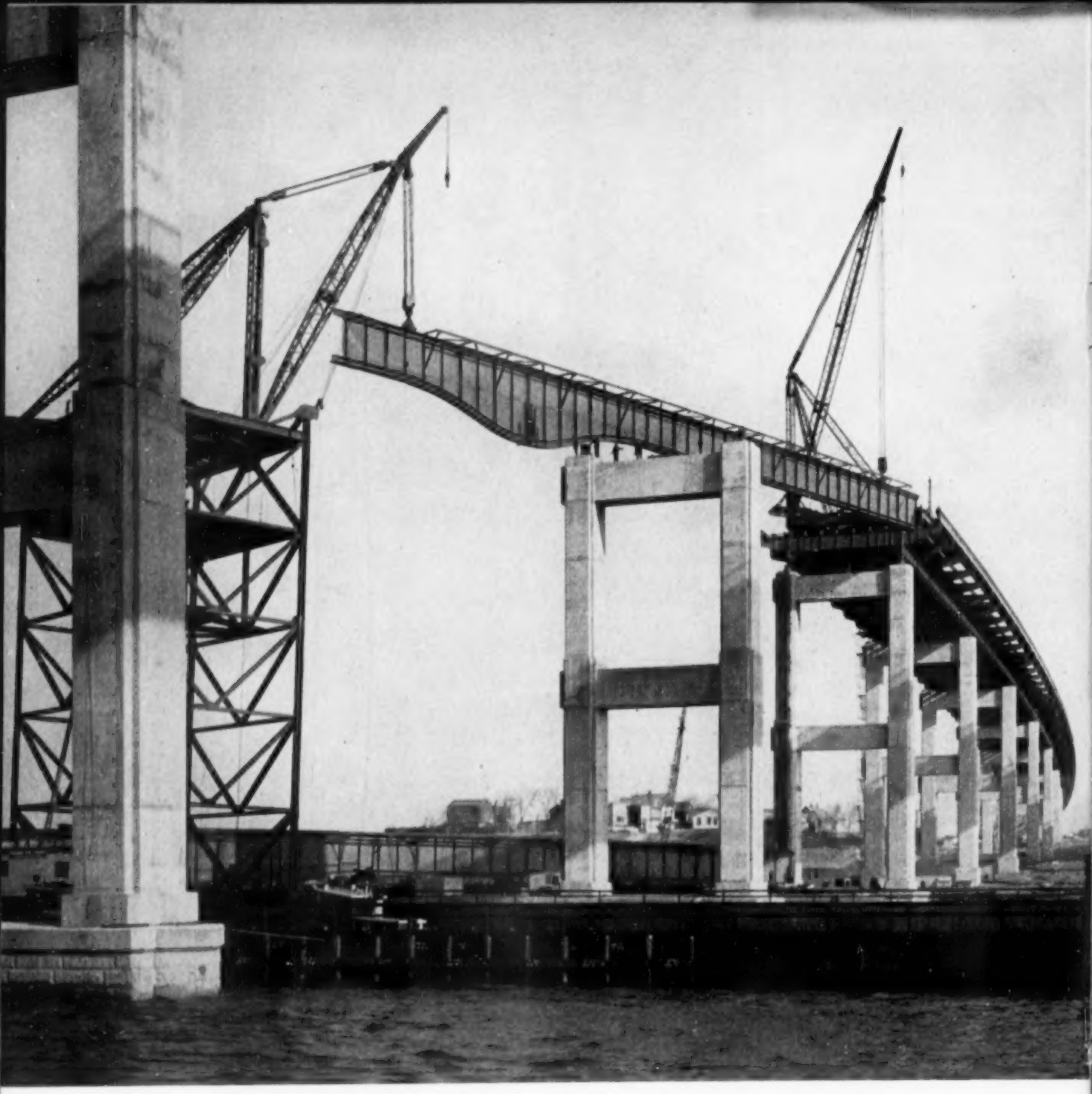

Wire Rope at Work—Spanning the Raritan River near Perth Amboy, N. J., this 4400-ft bridge is an important link in the Garden State Parkway, a $285,000,000 turnpike that will provide almost effortless driving to New Jersey shore points. The Parkway's 165 miles will extend from near Paterson to Cape May, the southernmost finger of the state.

The photograph above shows a 200-ton girder being lifted into place on the bridge piers. Bethlehem wire rope handled the load, and a touchy job it was, too. But Bethlehem rope is made for chores like this, and the job went off without a hitch. A responsible assignment, one typical of the heavy lifting and hauling work entrusted to this strong, supple rope in industries the country over.

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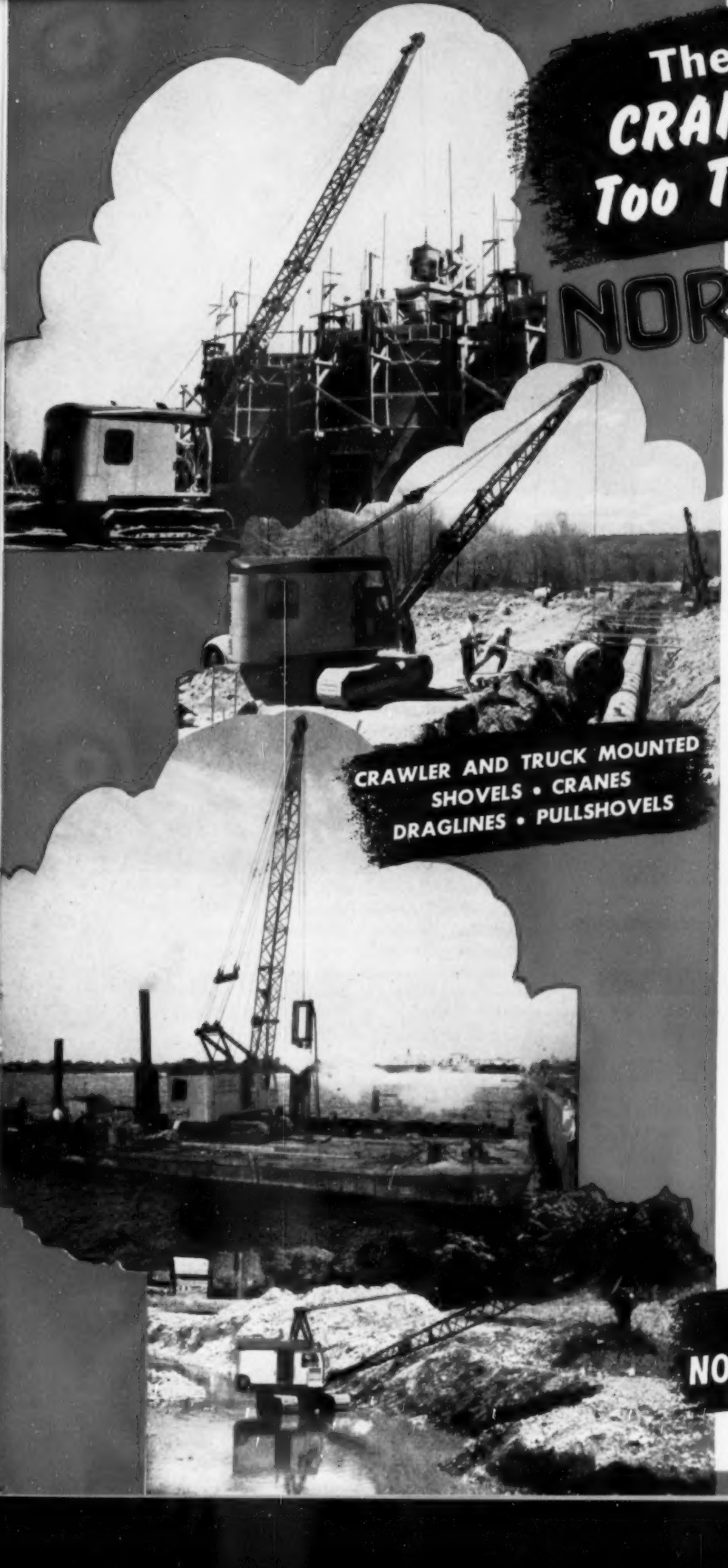

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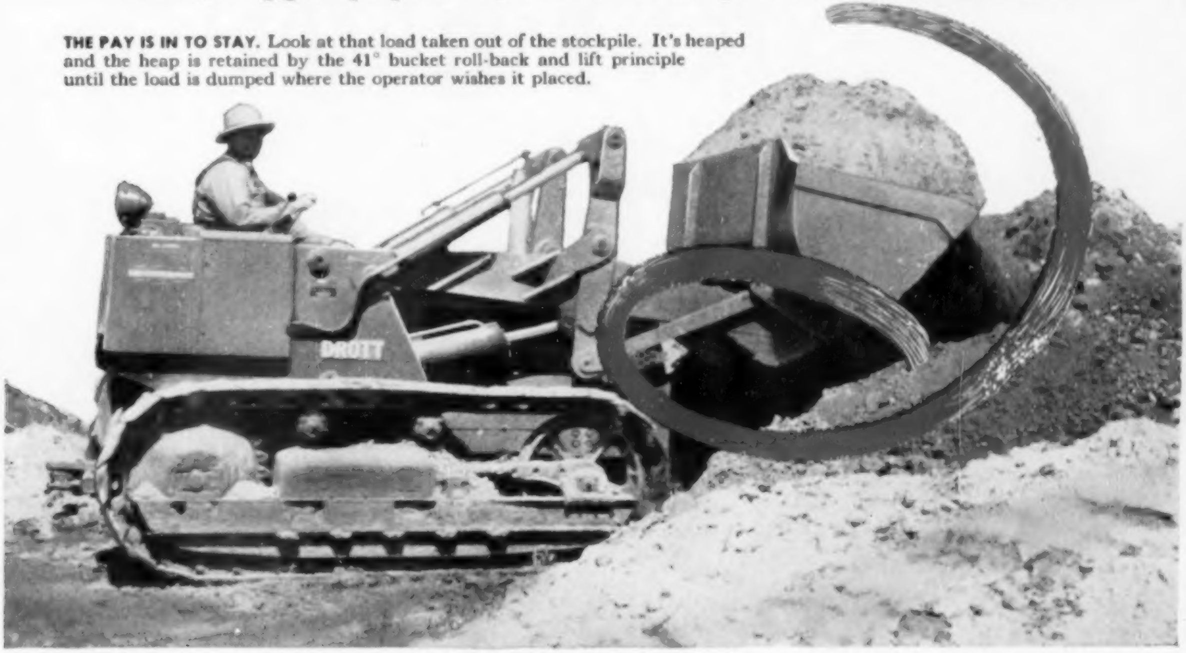

THE PAY IS IN TO STAY. Look at that load taken out of the stockpile. It's heaped and the heap is retained by the 41° bucket roll-back and lift principle until the load is dumped where the operator wishes it placed.

Big news in the front-end loader industry today is the amazing performance of the new leader in loaders—INTERNATIONAL crawler equipped with Drott Skid Shovels.

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Skid Shovels come in four sizes—$\frac{7}{8}$, $1\frac{1}{4}$, 2 and 3 cu. yd. buckets for the INTERNATIONAL TD-6, TD-9, TD-14A and TD-18A. You can get an eye-opening demonstration of the model suited to your needs by simply calling your INTERNATIONAL Industrial Power Distributor today.

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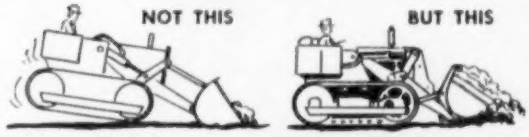
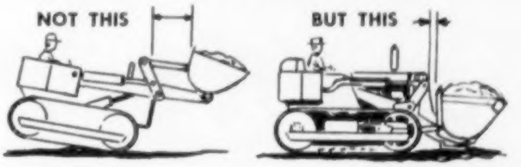


3,000 to 9,000 lbs. all on front of tractor

9,000 to 27,000 lbs. all on loader shoes on ground

SKID SHOE TRANSPORTATION



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PERFORMANCE
pays off in
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Picking up a heaped load of about 18 cu. yds. on a section of the Los Angeles Golden State Freeway. Contractor: Kuhn & Murphy.

EUCLID SCRAPERS have proved their high job availability and productive capacity on all kinds and sizes of jobs. They are the fastest growing scraper line in the industry and an important part of the profit picture for many leading contractors ... large and small.

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EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

CABLE ADDRESS, YUKLID CODE: BENTLEY

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Top Performance on the Toughest Jobs... *Everywhere!*

Dawson-Wade & Co. Ltd. have a tough 22-mile section of the Trans-Canada Highway near Golden, British Columbia. A "Euc" scraper is shown getting a heaped load of approximately 18 cu. yds. from a deep cut on this rough and rugged highway construction job.

One of two "Euc" Scrapers stripping overburden in a Fuller's Earth mine of Floridin Company, Quincy, Florida. This material is hauled 100 to 500 feet to a waste dump, from which it can be returned by the Scrapers to reclaim the land after the Fuller's Earth has been mined.

◀

Amis-San Ore Co. used five "Euc" scrapers, a Loader and fleet of Bottom-Dumps on a 2¼ million yard runway construction and channel relocation job at Lincoln Air Force Base in Nebraska. Here a "Euc" 15.5 yard scraper, working on the channel relocation, is loaded with clay excavation for the 1¼ mile haul.

▲

Four "Eucs" made the dirt fly as they averaged 2.6 minutes per round trip on this Ohio Turnpike job for W. T. Cook Const. Co. Although loading in hard, heavy clay, each "Euc" was heaped and away on the 1000 foot haul in less than a minute.

"Euc" scrapers picked up big loads in a hurry on this 12.9 mile section of the Garden State Parkway near Pleasantville, New Jersey for S. J. Groves & Sons, Minneapolis. "Euc" Loader and Bottom-Dumps were also used on this project.

▼

▲

Levelling a new park at Wellington, Dryden Construction Co. used the first "Euc" Twin-Power Scraper in New Zealand. Round trip haul was only 300 yds. but up-grades on the return trip were as much as 40%. The "Twin" spread loads of 24 cu. yds. in a gully and made the cycle in less than 2 minutes.

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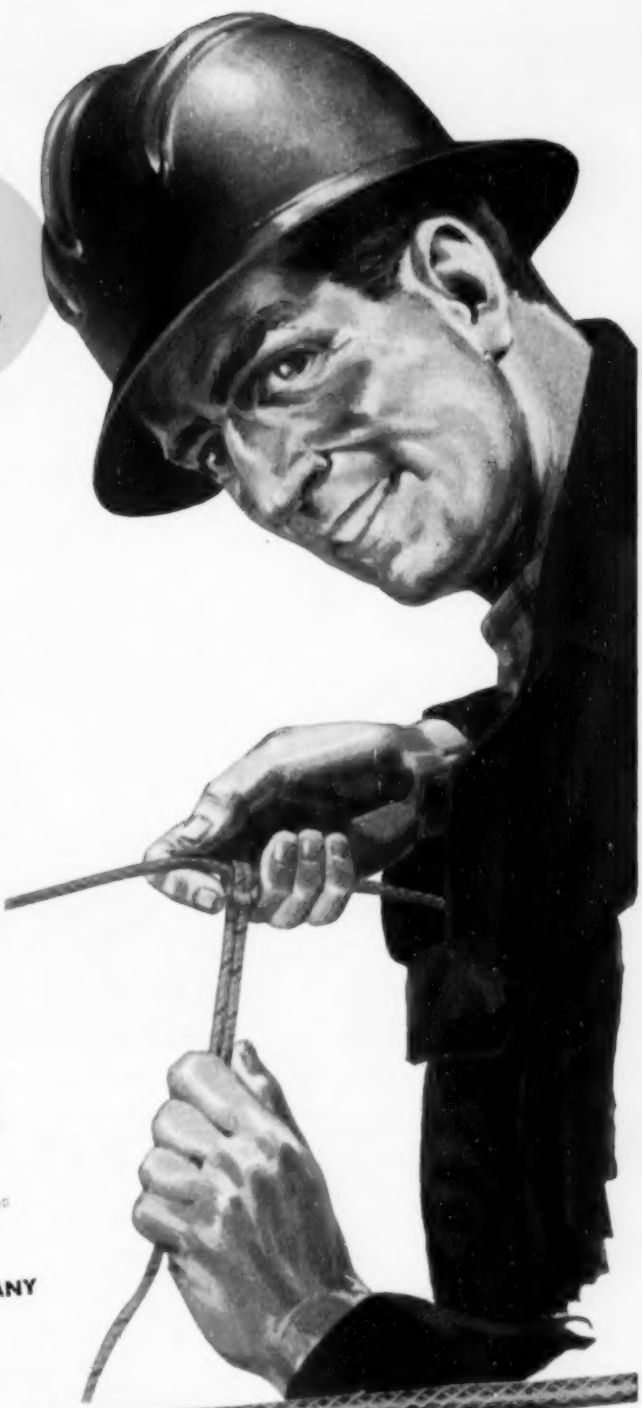

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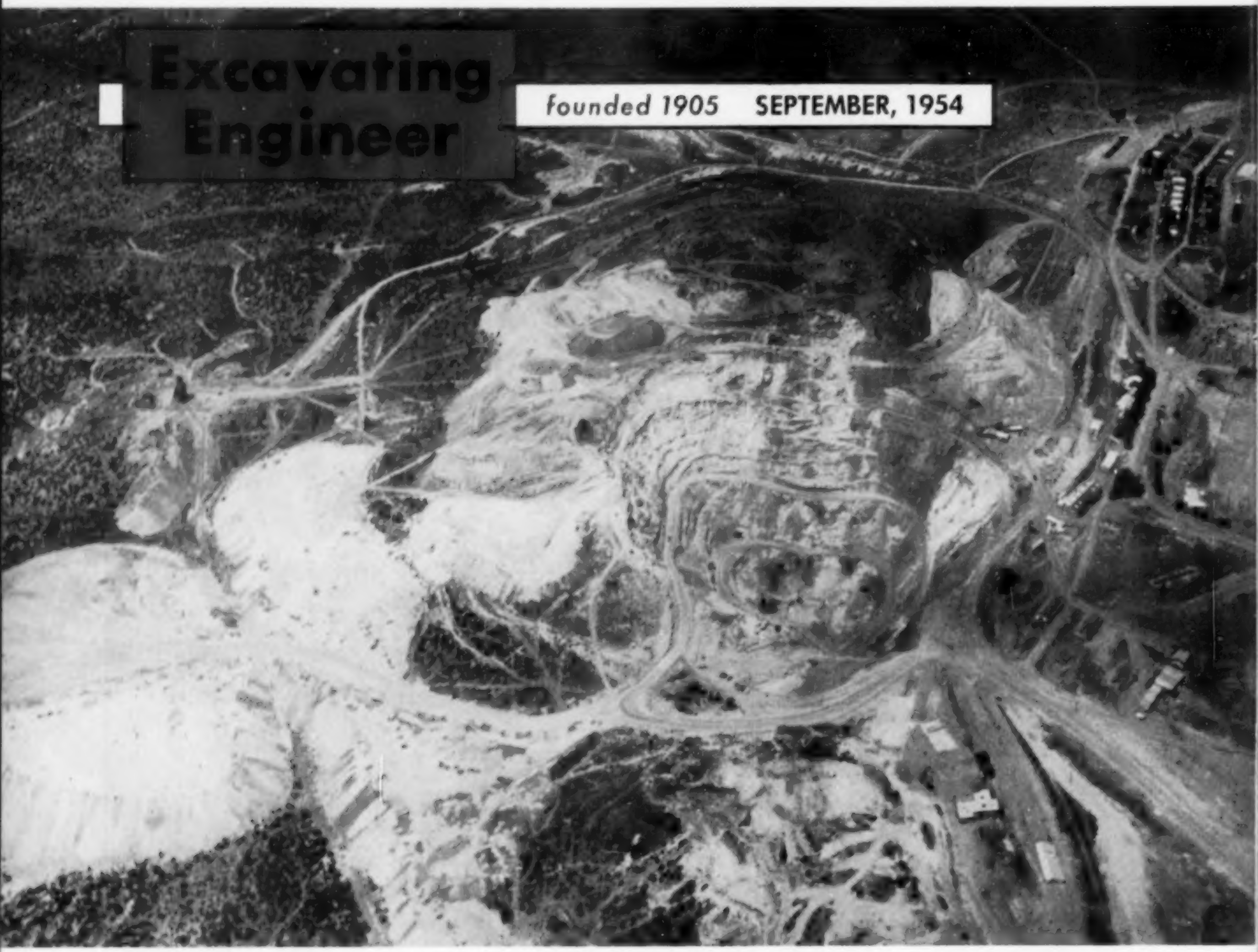


From 10,000 feet in air Nevada copper mines create impression of looking at moon's scarred surface through modern telescope.

Nevada's Newest Copper Mines

by Ray Day

Isbell Construction Co. of Reno moves millions of tons of stripping and ore as two mining companies extend production operations from original parent pit. Open pits make deep ore pay.

IN THE vast, pinion-pine country of eastern Nevada, in what is known as the Robinson Mining District, Isbell Construction Co. of Reno has some of America's heaviest excavation contracts under way. Great open pits, mined by power shovels, bear mute testimony to the never-ending search for copper. Both Kennecott Copper Corp. and Consolidated Coppermines Corp. have extensive mining activities in the Ely area. It is for these two companies that Isbell is moving large tonnages of heavy excavation.

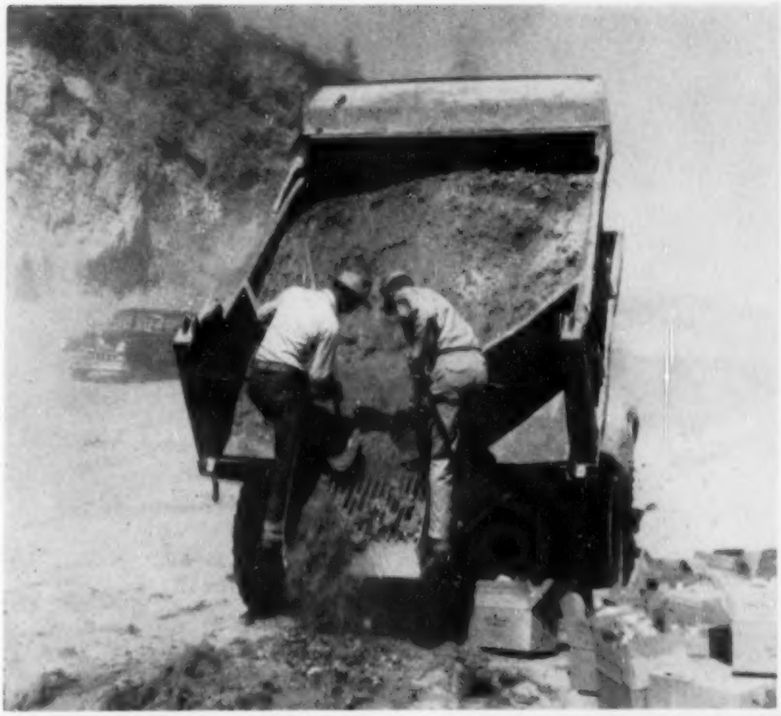
The pits, whose excavation quantities run into millions of tons, would have been impossible to dig when copper was first discovered in the Ely area. It has only been possible since modern excavating equipment was developed. The old mining days covered an era of laborious shaft work, coupled with underground mining at great expense. Today's operations are so streamlined and productive that material containing only 1% copper can be handled profitably.

Working in four principal pits for both the Kennecott and Consolidated mining spreads, Isbell is running about 70,000 tons of stripping and ore excavation five days a week, 24 hours a day. During the last quarter of 1953, when it was necessary to put on a burst of speed to meet contract commitments, the outfit worked around the clock seven days a week, averaging 170,000 tons per day. The material weighs a little over two tons per cubic yard. What has been accomplished only emphasizes Isbell Construction Company's position as one of the first-line excavation outfits of the world.

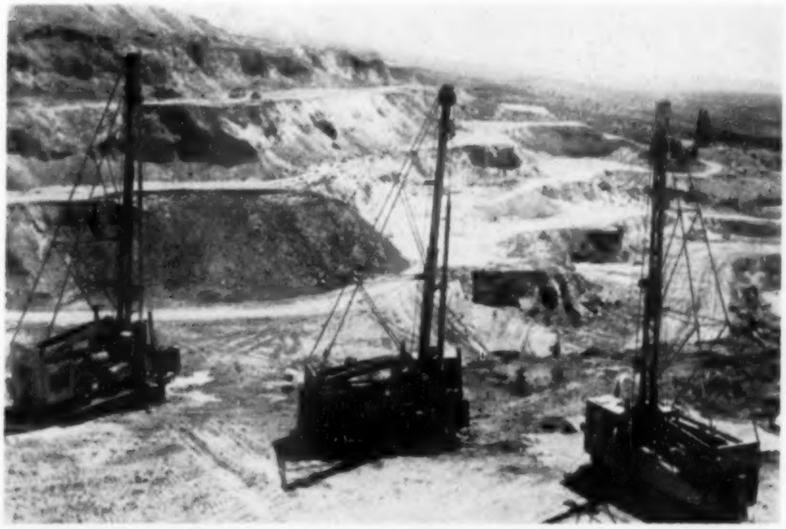
No Strangers to Mining

Isbell Construction Co. is no more a stranger to Nevada mining than are the two companies. Kennecott and Consolidated have been mining the area for almost half a century. Isbell has done both stripping and ore removal since 1942, with the exception of one year —1947. At present, Isbell has excavating equipment in four pits, ranging in location from two miles west of Ely to one mile west of Kimberly, a distance overall of 4½ miles.

The easternmost mine, which is known as the Kimbley Pit and is not to be confused with the town of Kimberly, or pits nearby, is being stripped and ore excavated for Kennecott. Isbell's job here calls for approximately 18 million tons of excavation, of which about 25% is copper ore. Directly over the hill from Kimbley Pit is Kennecott's huge Copper Flat Pit, near the town of Ruth. This is one of the most famous large open pit mines in the world, and is the parent pit of the Ely area. It is still being worked by Kennecott, and has been in production since 1908. Tonnages removed since 1908 have been astronomical. In that time, 120,954,240 tons of ore came out, along with 179,132,865 tons of stripped waste. This ore produced 2,490,000,000 lbs. of copper, worth $387,690,000. In 1945 and 1946, Isbell had a part in the excavation of the great pit, stripping about 30 million tons to widen the mine to the west and south. As a matter of fact, present pit operations are an extension of this early mining.


Bed of Ford F-8 dump truck was fishtailed and equipped with a grizzly separating device to speed stemming loaded holes with fine material.

Isbell's next two jobs, proceeding west, are known as the Brooks and Morris Pits. They are located about ⅜ of a mile southwesterly from the town of Kimberly. Excavation here is being done wholly for Consolidated Coppermines Corp.


Three Bucyrus-Erie blast hole drills, two 42-T's and 50-T, sink churn drill holes from top of bench as powder capacity for heavy blast is developed.

Farther west, beyond the towns of Ruth and Kimberly, a large new excavation known as Veteran Pit is beginning. Isbell's Veteran Pit contract is with Kennecott, but mining here is a joint-venture operation between Kennecott and Consolidated. Consolidated is participating in Veteran Pit on a 20% basis, calculated on the first-engineered quantities of an estimated 20 million tons of copper ore.

Approximately four tons of material has to be moved to produce 20 lbs. of copper.

In addition to these mining operations of Isbell Construction Co., there is still another interesting development under way. Kennecott is sinking a new 1600-ft. deep shaft near Ruth. When it is finished, mining at three levels—which is expected to start late in 1955—will produce about 25 million tons of new copper ore. In this mining phase, the block caving system will be used, pulling the material from the bottom of the orebody and raising it to the surface of the ground by hoists.

Because of the cave area which will be created where the town of Ruth

Still being worked by Kennecott Copper Corp., Copper Flat Pit has been in production since 1900. Far below, Bucyrus-Erie 120-B shovel loads out train of copper ore.

once stood, a major portion of the town had to be placed about two miles northerly to a new location. It is now known as New Ruth. Every building except 10 new residences and two commercial buildings was moved to the new townsite in 1952 and 1953, in preparation for the new underground mining.

Other facilities in addition to these pits include Kennecott's reduction plant, located 13 miles from Ely at McGill. The concentrator and smelter, with their appurtenant equipment, handle a mill production averaging 21,000 tons of ore every 24 hours. In 1953 the smelter produced 135,737,603 lbs. of blister copper, of which 83,597,237 lbs. was Kennecott's production. This smelter also handled Consolidated's output. A minor amount of silica ore was imported from local small mining operators, to assist in fluxing.

Basic Problems Apply Everywhere

The basic excavation problems which Isbell's crews face apply with equal importance to all four pits. Possibly the first serious problem is the location, so far as altitude is concerned. The mines are from 6500 to 7500 feet above sea level, and these elevations reduce delivered horsepower of engines and air compressors. The area gets heavy winter snowfall, with temperatures as low as 35° below zero. That's low enough to cause Diesel fuel in a tank to jell, or to clog in fuel filters. The same low temperatures produce frost penetration to a depth of 1½ to 2½ feet in the pits and on the haul roads. There is invariably a primary thaw each spring. To use one official's words, "it's terrible."

"You can figure on about a foot and a half of mud," this official explained, "but we have to keep going somehow because we have production commitments to meet."

Last year, because of peculiar weather conditions, there were three thaws. Fortunately, the last two were not as severe as the first.

There is also a common problem in all four pits of equipment maintenance. The waste material is particularly abrasive, and it has been necessary to hard-face adapters, to use thicker dipper teeth, and to hard-surface all dippers with much more care than is usually the case. The extremes of heat and cold create other mechanical problems, particularly under dusty conditions. An unusually long length of haul is another problem. When *EXCAVATING ENGI-*

Bucyrus-Erie 29-T drill stays ahead of the 54-B shovel in Kimbley Pit, which is designed to produce 5,000 tons of ore daily.

NEER visited the job, it was 1⅛ miles one way, and there was little chance of the distance being cut down appreciably.

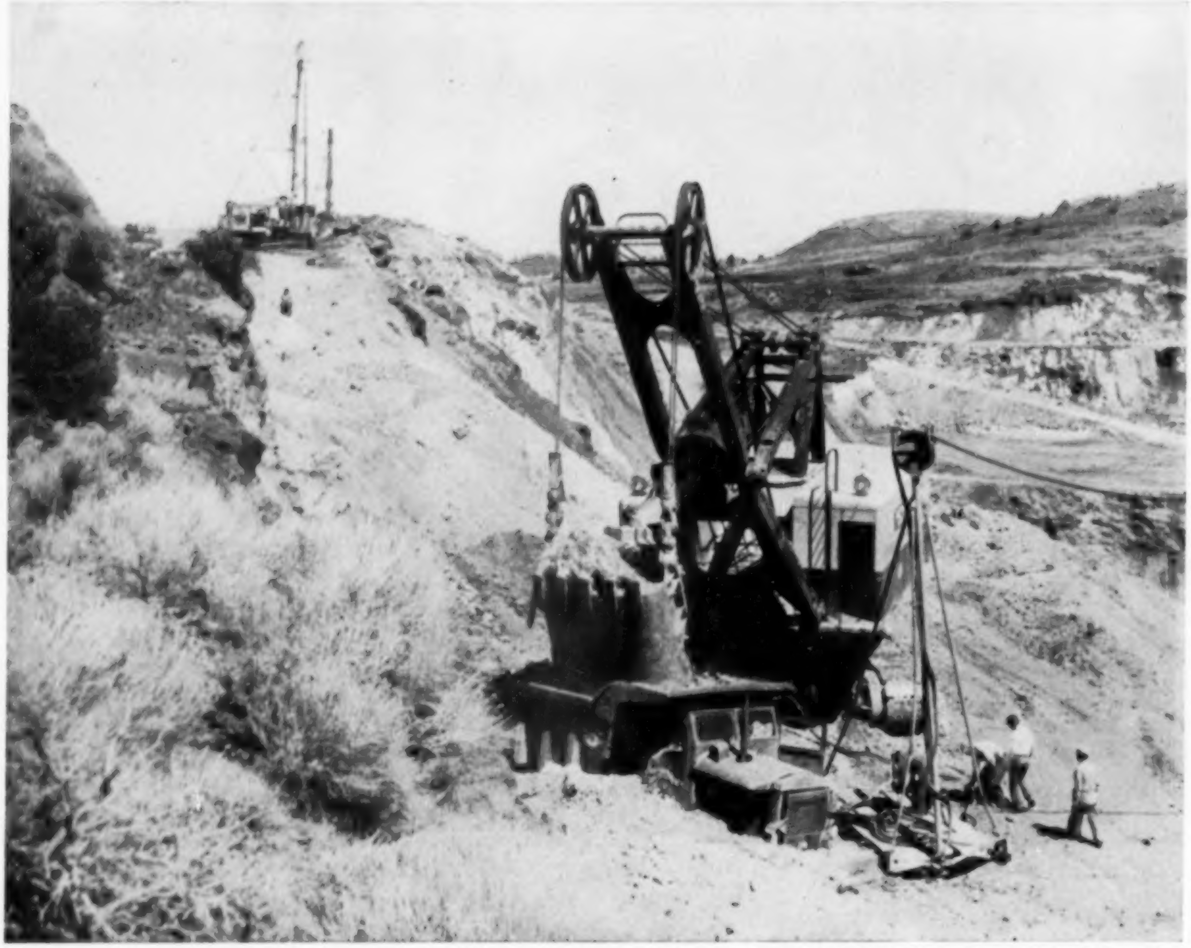
And also, the geological formations themselves present their own type of problems. Throughout the area, there are three main types of material, so far as stripping is concerned. They are (1) some silicified porphyry, (2) an altered garnetized limestone, and (3) some highly silicified formation called jasperoid, usually found near the surface, and which is always tough to drill and shoot. There is a small amount of altered limestone over the orebody, and limited amounts of fresh limestone in the orebody footwall. The copper-bearing orebody occurs in two principal forms: (1) silicified limestone and (2) silicified or ore porphyry. Geological details will be enlarged upon at the end of this article.

Kennecott Copper Corp. locomotive enters Kimbley Mine with a string of empties, which Eucs will fill by dumping direct off tipple. Ore cars haul about 70 tons apiece.

Finally, there was the financial problem of a large outlay in equipment. The big equipment fleet at the four-pit Ely area includes two Bucyrus-Erie 150-B shovels, a Bucyrus-Erie 120-B shovel, two Bucyrus-Erie 54-B's, three Northwest 80-D's, eight LDT 25-yd. Euclid bottom-dump trucks, four 1FFD Euclid 35-ton end dumps, 22 Euclid 37-T end dumps of 22-ton capacity, and seven single-power Euclid scrapers. These major units, with appurtenant smaller equipment like compressors, drills and so on, represent an investment of well over $2 million.

Big Work at Veteran Pit

Isbell's biggest current earthmoving job is at Veteran Pit, the western-most of the excavations. When Veteran Pit is fully developed, officials expect it to



Bucyrus-Erie 150-B excavates bank to initiate future berm in Veteran Pit. B-E 42-T and 50-T drills work ahead.

be 2400 feet long, 1400 feet wide, and averaging approximately 800 feet deep. Consolidated Coppermines Corp. is participating with Kennecott on a 20% basis, calculated on an ultimate yield of about 20 million tons of copper ore. The bottom elevation of this pit is expected to be 6600 feet above sea level.

As this is written, Isbell is at work on a contract to strip Veteran Pit. The first contract here — for four million tons of stripping—was let during the last quarter of 1953. That contract built a fire under Isbell's crews, calling for four million tons of excavation in October, November, and December's 90 days. It was a big assignment . . . one calling for ingenuity, good equipment and excellent organization. Isbell delivered. The material was moved successfully in that time.

Like all other open pits in the general area, Veteran is being excavated so that its benched-down sides form an angle of repose of 45° berm to berm. Veteran Pit's benches consist of a series of terraces 150 feet deep and 40 feet wide. Work began with the topmost pioneering on two twin mountain tops and has since expanded rapidly until Veteran Pit's sides now are beginning to take definite form.

If the work at Veteran Pit lasts for many years and Isbell's crews should happen to stay and finish it all—even beyond today's 10 million ton commitment—no man will ever forget the four million ton rush job of the last quarter of 1953. It was high-speed work with a majority of the equipment the company owned in the area assigned to the project other than that needed for scheduled production from the other three pits. In addition, a subcontract for about 500,000 tons of material was awarded to a construction company from Utah, who brought in a fleet of six Caterpillar DW-21's for the work. Isbell also rented from Kennecott Copper Corp. a Bucyrus-Erie 120-B power shovel, which helped to load Isbell's hauling equipment. Isbell threw its top flight machines into the production battle as well. There was a Bucyrus-Erie 150-B shovel, carrying a six yard dipper, a Bucyrus-Erie 120-B carrying a six yard Esco dipper (both company-owned shovels were equipped with outsize dippers), and seven Euclid single-power scrapers.

Hauling Drilling Rigs

Hauling equipment consisted of four Euclid 1FFD end-dump machines, four LDT Euclid bottom dumps, and 10 37TN machines. And there was plenty of drilling equipment, too, including a 58H Joy rotary, a Bucyrus-Erie 50-T, a Bucyrus-Erie 42-T, and two Bucyrus-Erie 29T's. For a short time a Winter-Weiss Porta-drill was also used. There was a fleet of Cleveland wagon drills carrying tungsten carbide bits for the rough ground, and Liddicoat throwaway bits for the easier drilling. These wagon drills were powered by one Sullivan and two Ingersoll-Rand air compressors.

For smoothing down the haul roads, there was a Caterpillar No. 12 motor grader, and several D8 Caterpillar dozers were assigned for miscellaneous cleanup in the pit.

Current operations, which are being done by the same construction procedures, are built around the same hauling equipment, along with two Bucyrus-Erie 150-B's with six yard dippers, a Joy 58-H rotary drill, one Bucyrus-Erie 50-T, and two Bucyrus-Erie 42-T's.

With the sequence of work now well established, the first order of business is drilling. Drill holes of large diameter are being sunk several feet below grade. As a general rule, the Bucyrus-Erie 50-T and the two 42-T's are working together to produce the required powder capacity. These machines are swinging heavy tools to make a nine inch diameter hole, and they account on average days for approximately 260 feet of powder hole. The Joy 58-H machine using Hughes rotary bits is turning in about the same amount of footage. All equipment will drill all the formations at Veteran Pit, though not of course with equal ease. Jasperoid is the most difficult rock to drill.

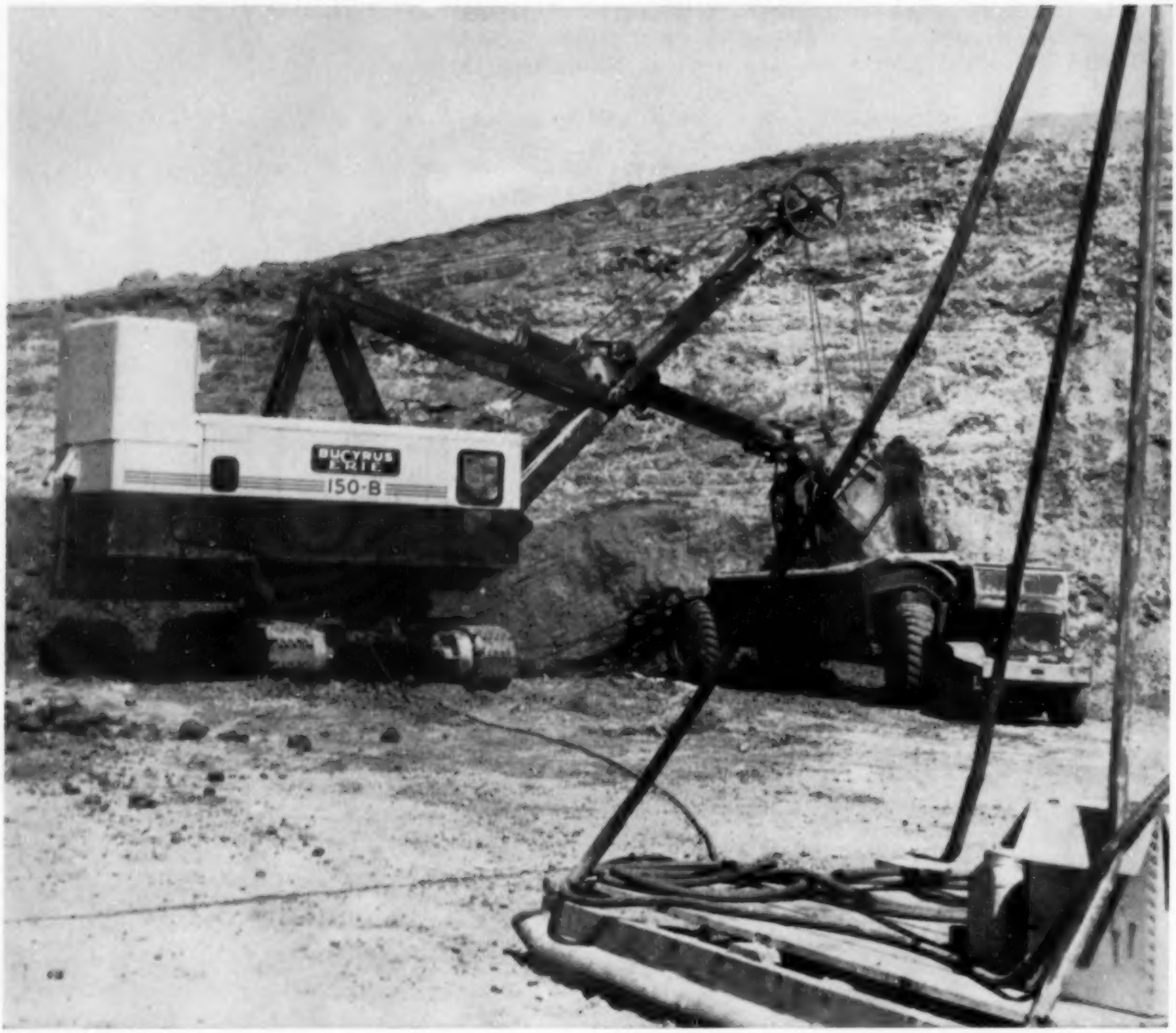
Drill bits for the Bucyrus-Erie equipment are sharpened regularly in the central shop, where a No. 12 Bucyrus-Erie bit dresser is available.

The holes are being loaded with Hercules 65% free-flowing powder, and are fired with Primacord detonating fuse or electric blasting caps. In some cases where wagon drills have been used during the early stages, the holes have been fired with delay caps, particularly in hard ground, so that the benches may be broken out clean. On the larger-diameter holes, where centers run to 20 feet, instantaneous shots are the rule.

Seek Waste Grounds

Loading of broken material is a job for two Bucyrus-Erie 150-B's only five months old. These two machines, with their six-yard outsize dippers, are handling heavy material successfully at a daily average rate of about 18,000 tons per machine in 24 hours. The material being stripped is loaded to the Euclid fleet and hauled away to large spoil areas in the vicinity. Many years ago, when Isbell Construction Co. first began working in the area, it moved some excavation from Coppermines' old Tonopah pit. As was experienced years ago, the amount of stripping in relation to copper ore is so large that the disposal of stripped material has become quite a problem. New dump ground areas are needed and prepared. Isbell has used the old mined out Tonopah Pit for that pur-

Above: Maintenance man is changing oil for Kohler light plant mounted on Joy drill. Below: Northwest 80-D shovel loads Euc haul truck in Brooks Pit.



Bucyrus-Erie 150-B shovel loads waste to Euclid truck. Addition on cab houses unit for cooling electric motors during summer.

pose when the Copper Flat pit was extended. This pit is now full, and stripped material is being deposited at other spoil areas in the same general vicinity.

Disposal conditions at Veteran Pit are not adverse, except when the spring thaw breakup comes, and then they are adverse everywhere. Hauling at Veteran Pit covers roads whose grades average 3% but some are steeper. Excellent haul roads are maintained by the motor grader. Two sprinkler trucks haul water almost continuously during the dry season to take care of the dust problem. A considerable amount of crushed rock and gravel has been hauled to resurface the roads in winter, during the period of frost conditions.

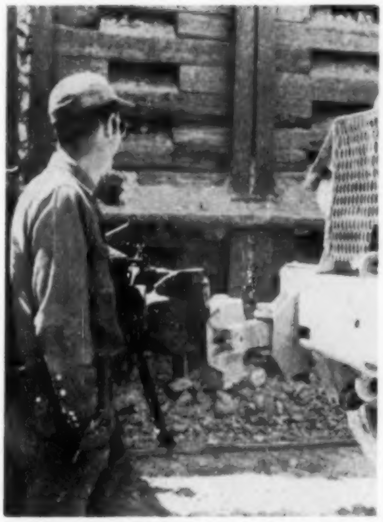
Kimbley Pit Includes Ore Removal

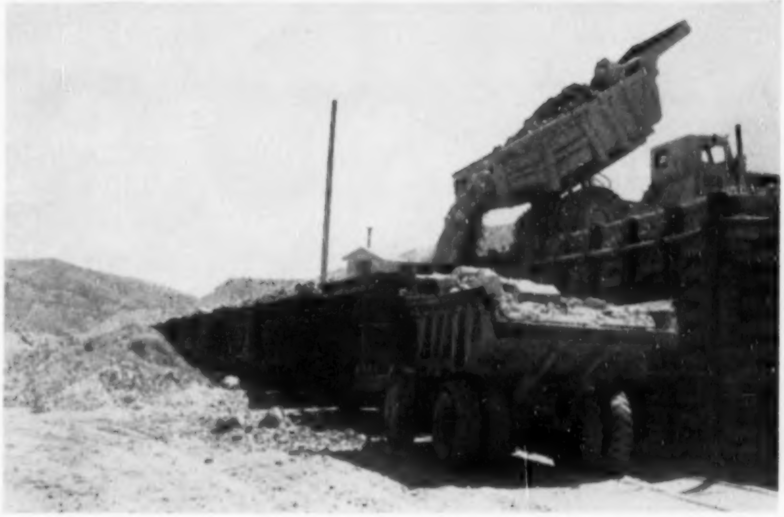
The most easterly of Isbell Construction's operations is the Kimbley Pit, located only two miles west of the town of Ely, close to the U. S. Highway 50. Started in 1950, Kimbley Pit is designed to produce about 5,000 tons of ore per day to supplement Kennecott's production from the Copper Flat Pit. Isbell's contract here calls for 18 million tons of excavation, comprising both stripping and ore. Like other pits in the area, Kimbley produces copper bearing ore of about 1%, and the waste to ore ratio is about four to five tons of stripping to one ton of ore based on the original estimate.

Kimbley Pit will be approximately 1,100 feet wide by 1,350 feet long and 400 feet deep when completed. The bottom elevation will be about 6,550 feet above sea level. In general, this pit is about 400 feet deep, but along the north side where a particularly high peak had to be cut off the top elevation is approximately 7,000 feet. The pit outlet is at Elevation 6,770. There is a maximum haul of 1⅛ miles here to dispose of stripping and waste. The ore haul is approximately one mile. Ore goes downhill to a railroad tipple near Isbell's main shop.

Kimbley's benches are 40 feet wide and worked on 25-ft. shovel banks and are 100 feet deep. The same 45° berm to berm slope is maintained, however, to insure stability of the pit sides. Kimbley Pit was started in November 1950, with the first stripping. Isbell now is concerned principally with ore mining, since most of the stripping has been removed.

In the early stages, when stripping was the main job, drill holes went down on approximate 20-ft. centers, but now that ore predominates, Isbell officials are examining much more closely the





Left above: Railroad coupling was mounted on front of Euc end-dump. Right above: With attachment Euc acts as "locomotive."

Brought 1⅛ miles downgrade from Kimbley Pit by Euclid haulers, ore is ready for its rail journey to McGill concentrator.

differences in formation, so that holes can be drilled farther apart if conditions permit.

The Kimbley Pit operation is now basically a one-shovel and truck spread, with a single drill keeping ahead. The shovel is a Bucyrus-Erie 54-B Diesel; the drill is a 29-T; and the hauling units are seven Model 37T Euclids. The Bucyrus-Erie shovel is equipped with an outsize three yard Esco dipper, with Esco teeth and adapters, and is accounting in an average 24-hour period for about 10,000 tons.

Drilling and shooting methods apply to the Kimbley Pit as at Veteran, except that there has been some ground water noted at Kimbley. So far, it has not interfered appreciably with the work, but it may become worse later on as lower elevations are reached near the pit bottom.

But Kimbley, however, was not always the prosaic operation it now has become. At the peak of activity, this pit saw three 80-D Northwest shovels, 25 Euclid 15-ton trucks, two Bucyrus-Erie 42-T's, one 29-T and a 27-T drill, along with some smaller equipment. At that time, the peak tonnage was running between 30,000 and 35,000 per day in order to reach an ore production schedule.

Two innovations were developed in the early stages of this pit. One of these is a special F-8 Ford conversion, built to place stemming material directly into large-diameter powder holes. The end of the F-8 was fishtailed in the welding shop, and a small grizzly was built in, so that coarse material could be screened automatically as the load was dumped over the hole. This places the fine particles down in the drill hole over the powder charge, and the coarse particles outside. An excellent job of stemming is the result.

The second innovation consists of what one official described as "the best locomotive on the line." A load-ballasted "Euc" was equipped with a standard railroad drawbar on its front bumper. This unit is used to switch railroad cars and trains around the tipple, and has thus far proved to be better than anything tried before.

Kennecott railroad ore cars at the tipple haul about 70 tons apiece. The 17 mile trip to the McGill reduction plant is made with the aid of Kennecott locomotives.

Brooks and Morris Pits Active

Also active on a stripping and mining basis are the Brooks and Morris Pits, both being mined for Consolidated

Consolidated Coppermines Corp. is taking ore from newest pits, Brooks and Morris. Both mines are big-yardage undertakings.

by Isbell's earthmoving equipment. Both pits are sizable undertakings in themselves. The Morris Pit digging, for example, had 15 million tons of waste and stripping in the initial contract which began in August 1950, and more work was contracted here late last year. Morris Pit is being enlarged by pushing its excavation back toward Veteran Pit.

Mining and stripping operations at Brooks and Morris are so similar to those previously described that it would be repetitious if the methods were detailed. Isbell's Northwest 80-D shovels, some of the smaller Euclids, and two Bucyrus-Erie 27-T blast hole drills are working on the Brooks and Morris assignments.

Equipment Maintenance

The maintenance and repair of the big equipment fleet is a major item, particularly when rush commitments like the last-quarter spurt of 1953 make comprehensive repairs almost impossible. At such hectic production times, Isbell operated on a policy of keeping the machines on the line in active production, sometimes with long periods between repairs. But Isbell Construction Company's management knows all too well that such severe use involves a price for equipment repair. As soon as the rush period was over, it put mechanics on a 6-day week to get all necessary repairs out of the way.

"Now that we're clear of our rush commitments, we're in a repairing mood," was the way one official explained it.

The mechanical force numbers nine . . . seven mechanics and two foremen. These men work from a headquarters shop, which is also the administrative office, near Kimbley Pit. The shop is modern in every respect, and is divided between heavy equipment repair, automotive service, warehouse, stockroom, and a steam-cleaning department. The heavy equipment repair division has four bays with 20-ft. doors and overhead cranes, so that major items of equipment can be repaired without regard for the weather outside. A secondary trouble shooting shop is located at Kimberly.

Tied in closely with equipment operation and maintenance is a company safety program, aimed chiefly at the intelligent use of machinery so that steady production will be obtained at minimum human risk. During a heavy winter storm, for example, a shift boss will usually shut operations down. His purpose is twofold. He's eliminating the possibility of an accident, reducing damage to his haul road system, and protecting the equipment. The minute a storm wanes, however, a motor grader quickly skims snow or mud off the sound surface underneath, and operations resume safely. During spring thaws, gravel hauling protects the roads and equipment at least to some extent.

No construction camp is maintained, since the towns of Ely, Kimberly, McGill and Ruth are nearby. Many of Isbell's key people are on the job and live in these towns.

Mines Have Rich History

The copper mining currently under way is rich in history, dating back to the years immediately following the Civil War. Mining began with the discovery of gold, silver, and lead ores in 1868 and 1869. From that time to 1902, the early mines produced metals worth $500,000 to $600,000, according to a 1917 USGS report by Arthur G. Spencer. The present industrial importance of the district is the outgrowth of the discovery and development of bodies of chalcopyrite and porphyry orebodies between the years of 1901 and 1904. Up to the close of 1913, perhaps 80 million tons of these concentrating ores, carry-

This is headquarters shop at Kimbley Pit. Wing at right houses office. Maintenance and repair are the order of the day here.

ing from 1 to 3% copper and minor amounts of gold and silver, had been developed.

During the years 1908-1913 inclusive, approximately 12 million tons had been mined and treated.

The earliest explorations began in November 1867, when a company of men guided by an Indian named John came south from Egan Canyon. They made locations near Ice Creek, undoubtedly the same as Murry Creek, which led to the organization of the Robinson Mining District on March 16, 1868. The district was named in honor of a member of the party, Thomas Robinson, who previously had been an assayer at Pahranagat.

Claims Go Way Back

The following claims are noted in old records: Old England, December 27, 1867; Elijah, March 6, 1868; Springfield, June 1, 1869; and London City. The old Elijah claim still lies a short distance above Lane City on the south facing slope of Robinson Canyon. Ores mined at the time are reported to have assayed $40 to $185 per ton. The present town of Lane City occupies the site of the former settlement, which

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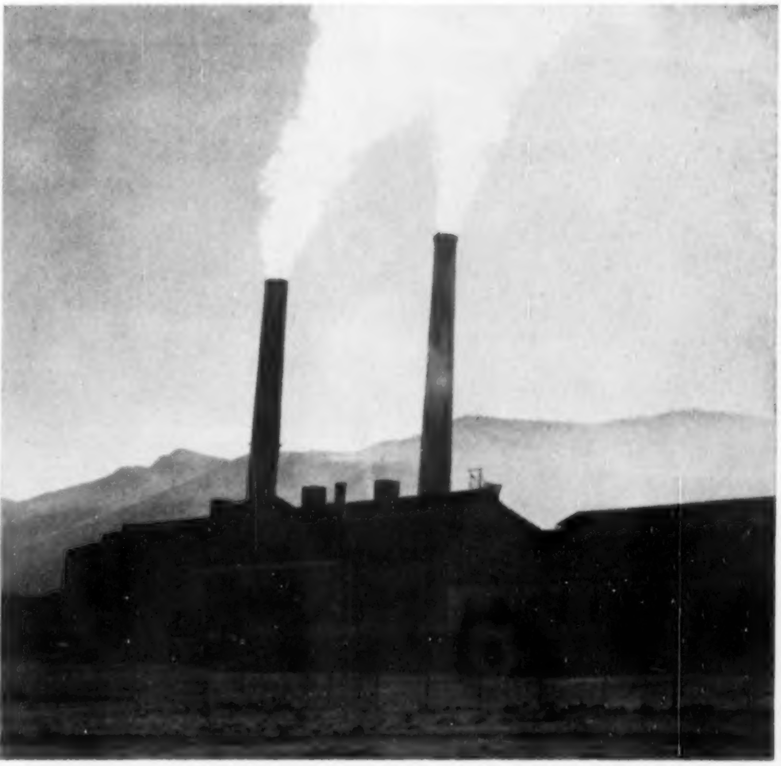


Kennecott concentrator at McGill presents industrial contrast to Nevada wasteland. Concentrator and smelter handle 21,000 tons of ore each 24 hours in this remote area.

Chicago-New York Dream Road Nears Reality With Ohio Turnpike

Three hundred and twenty-six million dollar superhighway to take only two years to build. Commission plans 1955 opening.

BACK in 1951, the State of Ohio had $28 million available for highway construction. Dispensing with fund allocations for all state and county trunk systems and using that entire amount for the construction of a modern, cross-state expressway, it would take more than 10 years to build what Ohio plans to open for traffic on Oct. 1, 1955. For on that date, the Ohio Turnpike—241 miles of modern, safe, limited access, multi-lane, grade separated highway—will be the Buckeye State's contribution to wresting the nation from its biggest traffic jam in history.

In October of 1953, the first concrete for paving was poured at the easternmost end of the pike, and an expedited section of 21.4 miles from the Ohio-Pennsylvania state line to route 18 west of Youngstown was nearing completion. Plans call for completion of the $326 million cross-state highway just two short years later.

The rebirth of toll roads is something Americans can easily understand. With more people owning more automobiles than at any other time in history and with the general trend toward suburban living still on the upswing, modern roads, in addition to being the transportation arteries vital to the nation's commerce, are becoming increasingly necessary to the safety of its population. Casualties for 1953: 1,340,000.

Unprecedented automotive travel, especially since World War II, has far exceeded all expectations, and as vehicle

Bucyrus-Erie 15-B ½-yd. dragshovel, powered by a Buda Diesel engine, ditches for cast 30-in. concrete pipe for field drainage.

Bucyrus-Erie 38-B crane, at left, tests pile for settle while Michigan clamshell brings up the approach fill for grade separation.

production rose to dizzy heights, highway construction was at a comparative standstill.

Revenue bond highway projects got their first big tumble with the Pennsylvania Turnpike in 1938. But roads and bridges of the toll variety were common more than 50 years ago when travelers accepted such charges as a necessary evil. Nowadays, paying a premium for the privilege of driving over modern expressways is more preferred than accepted by the driving public.

With the glowing safety and financial success of the Pennsylvania Turnpike still in evidence, one state after another has hopped on the toll project bandwagon. Almost every state east of the Mississippi has a toll road in operation, under construction, or under definite consideration.

In 1953 alone, a total of close to $800 million in contracts was let for toll facilities, and there is every indication that 1954 will make even that eye-opening figure look anemic by comparison. Ohio's cross-state highway has long been overdue. Vehicles pouring out of the Penn Turnpike into Ohio further congested the already serious traffic problem, and this fact did much to hasten the construction of the expedited section at that end. And from there, the road will run pretty close to four of the big five industrial centers—Cleveland, Akron, Toledo, and Youngstown — which contribute greatly to the state's number one national ranking in production of electrical machinery, rubber tires, stoves, and metal products.

Because the road will run so close to manufacturing centers, there is good reason to believe that industry will prosper even more. All along the recently completed New York Thruway, for instance, well-known industries (General Electric, General Motors, Allied Chemical) are building modern factories to take advantage of that expeditious means of moving men and materials to and from their plants.

Even now, roadbuilding isn't the only type of activity along the pikeway in Ohio. Close to the interchanges, motels are springing up. There will be no motels on the Turnpike. Minor land booms

Hough Payloader feeds sand and gravel to bucket conveyor on Johnson batching plant. Careful and continuous test of materials and concrete is carried out at site.

have developed at the interchange sites. Expectation among Ohioans is high. They expect an increase in industry and trade, which in turn will create more jobs. If New York's super highway is any indication, they may well be entirely correct.

All of this started in 1949, when the 98th General Assembly created by enactment the Ohio Turnpike Commission " . . . empowered to construct, maintain, repair and operate turnpike projects . . . and issue turnpike revenue bonds . . . payable solely from revenues, to pay the cost of such projects."

While the commission, with headquarters in Columbus, investigated other means of financing Turnpike Project No. 1, the members finally settled on and issued (on July 29, 1952) State of Ohio Turnpike Revenue Bonds in the face amount of $326 million, bearing an interest rate of 3¼% and maturing on June 1, 1992.

But all has not been smooth sailing since then. Expensive legal delays in acquiring right-of-ways were encountered. It was only recently (on July 16, 1954) that a 4-mile section on the northern perimeter of Elyria was acquired. Elyria opposed the road's location, and the case, for three parcels of land owned by the city, was finally settled in the Common Pleas Court of Lorain County. Jury verdicts awarded a total of $25,000 for the three parcels of land, the last of some 5,600 land parcels acquired.

Looks Like Money-Maker

The pike appears headed for financial success. Surveys indicate that for its first full year of operation (1956), revenue from tolls collected will reach $20.6 million, and will increase to about $35.5 million in 1965.

Most of the revenue is expected to flow in from truck traffic, even though more passenger cars (55.6%) will use the Turnpike than commercial vehicles. Trucks weigh more so the toll will be higher, but more than that, engineers say more of them will traverse the entire distance. Example: one-way through trips for the heaviest of trucks with full trailer (up to 78,000 lbs.) will pay $21.00 while passenger automobiles will pay $3.00.

For a little over a penny a mile, the motorist will be able to leave Indiana and bump into the Pennsylvania state line in three hours and 23 minutes saving over public highways. Other typical time-saving trips: Cleveland-Toledo, one hour, 27 minutes; Youngstown-Toledo, two hours, four minutes; Toledo-Akron, one hour, three minutes.

On top of the tremendous time savings, the motorist will be driving on a road that has been designed for maximum safety.

The Ohio Turnpike is credited with being the first toll road on which the National Safety Council was consulted during the planning and construction stages.

The principal considerations in developing the design were safety and adequate capacity. The J. E. Greiner Co., Baltimore, Md., was called in as consulting engineers. Richer in experience gained by designing the Pennsylvania Turnpike, the Greiner Co., in embodying those two considerations added (3) that it be constructed in order that it might be maintained economically, and (4) that it be constructed at minimum costs commensurate with the first three factors. The Greiner Co. staff, in excess of 60, operates from Cleveland. E. J. Donelly is in charge of the project. J. J. Jenkins, Jr. is resident engineer and partner and Tony Gregoria, is his assistant. Maj. Gen. Robert S. Beightler, USA Ret., is executive director of the Ohio Turnpike Commission. Chief engineer for the Commission is T. J. Kauer, with R. J. Lehman as assistant.

With safety as the watchword, precautionary factors over and above the customary dividing median, grade separation type of expressway were incorporated. One of these measures requires that vertical curves at the summit of hills be designed so that the driver can see a four inch high object on the pavement a minimum distance of 900 feet ahead. High speed traffic was taken in-

Powered by Caterpillar Diesel, Marion 670 crane drives "H" piling to average depth of 55 feet for overpass on US 250 north of Milan, O. Koehring clams out for footings.

Another overpass was built on US 20 near Toledo. On hand for clearing was International TD-14 tractor with hydraulic dozer.

to consideration, with the incorporation of a preventive feature requiring all curves, right or left, to be limited to 2½ degrees.

Motorists who have had occasion to frequent main truck arteries will appreciate plans which call for a 2% maximum ascending grade (4% descending) which will permit loaded trucks to clip along with automobile traffic.

Even dimensions allotted to the center strip have a background of added safety. Between the outside edges of the outside shoulders, a minimum of 124 feet is provided. The two roadways, each 24 feet wide, will be separated by a depressed median divider at least 56 feet wide, 40 feet of which will be planted center strip. The bottom of the longitudinal drainage ditch in between the two roadways will lie four feet or more below adjacent pavements. This drainage feature may well serve to trap an out-of-control vehicle, preventing it from crossing the median and doing damage to oncoming vehicles, thus confining loss of property and injury to the out-of-control vehicle and its responsible driver. Outside shoulders will be 10 feet wide, inside shoulders eight, both paved with three inches of penetration bituminous macadam.

Plan For Duplicate Stops

Highways will intersect at 15 interchanges, where vehicles will have acceleration and deceleration lanes on which they can enter or leave the Turnpike.

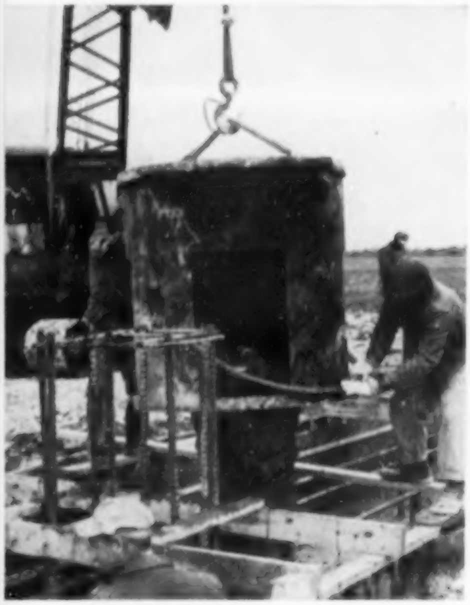
Because some pedestrian accidents were found to be due from crossing over to get at a service area, the combined service station and restaurant facilities in the Ohio layout provide for duplicate stations, located directly opposite one another. Each roadway will be served, in this manner, by its own service area, with acceleration and deceleration lanes also provided. Moreover, it was found that dual facilities on each side required no more installations than under the staggered system.

Eight pairs of them are scheduled to be built at approximate 30-mile intervals, each with areas for restaurant and vehicle servicing and adequate parking facilities.

Eight maintenance buildings, each installation designed to handle about 30 miles of turnpike, will be constructed. Each will be of sufficient size to house and repair the equipment necessary to the section's operations.

At all points of access to and egress from the Turnpike, toll plazas will be

Bucyrus-Erie 54-B dragline, equipped with Cummins Diesel and torque converter, swings 3-yd. Hendrix bucket as machine excavates ditch for special deep well drain.



Bucyrus-Erie 22-B crane is rigged with Insley 1-yd. concrete bucket to pour 44 yards of concrete for structure footings.

constructed, designed to collect tolls from users with a bare minimum of annoyance and delay to patrons. Bids to construct three of them for the 21.4 mile expedited section were opened on the 13th of May of this year. Each toll plaza will include a one-story utility building, booths, a canopy, islands, and parking area.

The utility building at each toll plaza will be faced with brick and trimmed with sandstone, measure 65 feet long and 34 feet wide, and will provide space for an office, locker room, emergency electrical generator, lavatories, and a room to house recording instruments used in connection with the automatic toll classification equipment.

The 17 ft. x 3 ft. 8 in. armored plywood faced booths will be connected by canopies, and will be mounted on islands running 128 ft. 6 in. long and 7 ft. 8 in. wide. Each of the toll plazas will be equipped with a water supply system and sewage disposal facilities.

The separate, lump-sum bids asked for the construction of the toll plazas include, further, all the grading, roadway paving adjacent to the toll islands, seeding and sodding, and all the plumbing, heating and electrical work required for the operation of the plazas.

The state's specifications for both sub-base and concrete paving are exacting. The selected sub-base material for instance, must not be composed of shale. It has to be composed of broken, crushed, run-of-crushed, or run-of-stone or slag; sand and gravel or run of bank gravel, or a uniformly blended mixture of combinations of these materials. Materials must conform to the following gradation limits:

SIEVE	TOTAL PER CENT OF PASSING
3 inch	70-100
1½ inch	40-100
No. 10	20-75
No. 40	10-35
No. 200	0-15

Even more explicit instructions, conforming to Ohio's specifications, point out that the materials shall be reasonably well graded from coarse to fine, with the maximum size particles not exceeding three inches in diameter. The fraction of the materials passing the No. 40 mesh sieve shall have a plasticity index of not more than three and a liquid limit of not more than 30. Percentage of material passing No. 200 sieve shall not exceed one-half of that passing the No. 40 sieve, and shall not in any case exceed 15. Particles smaller than 0.02 mm. shall not be present in an amount exceeding 3% (by weight) of the material.

Want Uniform Pavement

The purpose of the exacting specifications is to avoid unduly frequent changes in the type of material used, to minimize the possible effects on the pavement of variations in long-term performance characteristics of dissimilar sub-base materials. Pavements, conforming to state specifications, will be 10-in. reinforced concrete. Reinforcing may be either wire or bar mesh. In the case of wire, 6 x 12 spacing of .04 gauge wire is specified, and where the alternate is used, two foot transverse spacing of ⅜-in. bar is specified.

The table on page 29 shows proportions for Class "D" concrete to be used for pavements with the weights of aggregate shown based on average specific gravities. Correction factors are applicable to individual projects.

The 6,847,000 sq. yds. of pavement (10-inch reinforced concrete laid on six inches of densely graded selected subgrade material) was designed to carry an axle load of 36,000 lbs., much in excess of the legal load of any state today. Even in New York the legal axle

Hairpin hook on Bucyrus-Erie 22-B crane facilitates placing of big concrete drainage pipe into trench cut by Lima dragshovel.

Type of Coarse Aggregate	Wt. in Lbs. of Dry Aggregate						Minimum Cement Content Per Cu. Yd. of Concrete, Sacks	Maximum Net Water Content, Gals. per Sack of Cement	Slump Range, Inches	
	Natural Sand			Limestone Sand						
	Fine Agg.	Coarse Agg.	Total	Fine Agg.	Coarse Agg.	Total			Regular Placing	Vibrator Placing
Gravel	160	325	485	160	320	480	6.5	5.5	2-3	1-1½
Limestone	180	300	480	180	295	475	6.5	5.5	2-3	1-1½
Slag	195	245	440	195	245	440	6.5	5.5	2-3	1-1½

load is set forth at 22,400 lbs., and that state heads the list.

In addition, 55,400 sq. yds. of Class "E" concrete for footings and 305,000 sq. yds. of structural concrete will be used.

A total of 50,700,400 lbs. of steel will go into structures, and an even more impressive 55,589,400 lbs. of steel will be used for reinforcements. Sundry other estimated totals: copper, 490,943 lbs.; pipe, 1,083,800 lineal feet; right-of-way fence, 2,502,500 lineal feet; guard rail, 1,288,890 lineal feet.

The following is a breakdown of the 612 structures, with lengths of major river crossings also indicated:

Cuyahoga River Bridge: 2,682 ft. 3 in.
Maumee River Bridge: 1,394 ft.
Huron River Bridge: 1,107 ft. 11 in.
Sandusky River Bridge: 915 ft. 6 in.
Major River crossings: 4.
Total stream crossings: 38.
Structures for carrying highways over or under Turnpike: 282.
Structures for carrying railroads over or under Turnpike: 41.
Drainage structures: 251.

The total excavation is estimated at 39,632,787 cu. yds. with 30,499,500 estimated fill.

One of the big highway cuts on record may be found right here on the Ohio Turnpike. Contract sections 13 and 14 have what is in all probability, one of the largest fills (1,600,000 cu. yds. to a maximum height of 104 feet) in U. S. highway construction. That figure is part of some 5 million yards of material to be excavated, 1½ million yards of it rock, by Western Contracting Corp. of Sioux City, Ia.

The section is a hilly, almost mountainous, stretch 9½ miles long, about 10 miles north of Akron. The $10,030,453 package deal includes roadway, paving, structures, and drainage. Involved are an interchange at the intersection of Route 8, 13 bridges, and the installation of 60,000 feet of culvert pipe. Structure work was sub-let by Western to Al Johnson Construction Co. of Minneapolis, Minn.

Western Contracting Corp. had just completed work moving 40 million yards of earth for the Fort Randall dam in South Dakota. The firm brought in many machines direct from that site, among which were two 151-M Marion shovels, one with a 7½-yd. dipper, the other with an 8½-yarder. While most of this is scraper dirt country and Western employed nine of them (five Euclid 8TDT w/Cummins 275-hp engines, one Euclid twin-engine w/Cummins engines, two Caterpillar Model 80

Caterpillar D8 tractor pulls twin LeTourneau tamping rollers to compact fill. At extreme left of picture, ¾-yd. Lima dragshovel trenches for 30-in. concrete conduit.

Slip form under culvert permits pouring concrete for one section; then pulling form forward from under set concrete and readying it for the next section to be poured.

Excavation for footing is handled by Bucyrus-Erie 22-B clamshell. Raymond oil-fired, steam powered rig was employed by contractor to drive concrete piling for footings.

18-yd., and one Caterpillar DW20), the rocky million and one-half yard cut, of course, had to be blasted and handled by power shovels. Haul units included thirteen 25-ton bottom-dump Eucs, eleven end-dump 30-ton Macks, and nine smaller units.

Practically all along the bottom of the huge cut, special deep well drainage was required. In the fill section special drainage in the form of 60-in. corrugated multi-plate culvert was necessary.

To install that pipe on one section, Western employed just two machines: A Bucyrus-Erie 54-B with Cummins Diesel and torque converter swinging a special 3-yd. Hendrix dragline bucket, and a Bucyrus-Erie H-3 Hydrocrane. When Excavating Engineer visited the scene, the 54-B with 80 feet of boom was taking careful passes at the shallow furrow in which the pipe was being laid.

Bolt Pipe Sections

Close behind each bite of the bucket, men crouched inside the pipe, bolting the sections together. The H-3 unloaded sections which had been placed on a large wooden skid for quick move-ups. But prior to the smooth running pipe laying activity which was in evidence, delays were encountered. Access roads had to be cut so that materials and machines could be brought to the culvert sites, and a lot of channeling had to be done.

For the night shift, flood lights designed and manufactured by the contractor were provided to follow the work closely, and well they could, for they were self-powered, mobile units. The "trees," eight of them in all, were made up of a tubular mast which telescoped under its own power to a maximum of 60 feet in height. Each was mounted on a carriage with three pneumatic tired wheels. A Caterpillar Diesel powered a Louis-Allis generator to pro-

Caterpillar D8 tractor, rigged with a bulldozer, levels fill borrowed from bank by Cat crawlers pulling LeTourneau scrapers.

vide current for the eight 1500-watt lamps on the mast.

Filling was under way over the pipe which had been placed and the open-to-traffic scheduled completion date, Oct. 1, 1955, seemed well within Western's grasp.

Western Contracting Corporation's key personnel include C. W. Barnhart, project manager; Carl Collins, general superintendent; and Herman Holderby, equipment superintendent. The engineering firm of Howard, Needles, Tammen and Bergendoff has charge of the section. Browning Crow is project engineer.

On down where state Route 60 crosses the pike some 40 miles west of Cleveland, a less spectacular but equally interesting spread was being worked by A. J. Baltes, Inc., of Norwalk, O.

This $3.2 million five mile contract section No. 27 involves 1,085,000 yards of roadway excavation (not including channels or structures) and 20,000 yards of borrow.

Three Caterpillar D8's pulling LeTourneau scrapers were busy bringing up the road grade. Borrowing from a high bank, the tractor-scraper teams were being aided by another D8, which acted as a pusher during loading only. Upon dumping, another D8 pulling twin LeTourneau tamping rollers compacted the fill while another Cat bulldozer helped in grading.

On the high bank side of the proposed roadway, a Cleveland Model 110 wheel trencher ditched for small diameter drainage pipe.

Provide Good Drainage

The principal and more extensive drainage system, running from state route 60 for nearly a half mile and emptying into the Vermillion River, was nearing completion. Already more than a hundred feet of 18-in. and 700 feet of 24-in. pipe had been put in, and progress on the remaining 1,800 feet of 30-in. pipe was well under way.

A Bucyrus-Erie 22-B crane powered by Cat Diesel was equipped with a hairpin hook to handle and place the 30-in. wire mesh reinforced concrete pipe. Trenching was being handled by a ¾-yd. Lima dragshovel.

John Baltes is in charge of the contractor's operations and James F. Ritchie is the project engineer for Chas. E. Deleuw, contracting engineer on this section.

On US 250 just north of Milan, which city contains the red brick birthplace of inventor Tom Edison, the J. A. Jones Construction Co. of Charlotte, N. C., had the job (contract section 31) of building the structure which is to overpass that highway.

A Marion 670 crane, Cat Diesel powered, was used to drive "H" piling to an average depth of 55 feet. Six pilings for each of the four piers to be constructed in connection with the overpass were being set down, using a Vulcan pile driving hammer, while footings for the piers were being dug by a Koehring clamshell.

To supply the compressed air used to drive the hammer, two compressors were set on either side of a central storage tank, one an Ingersoll-Rand R-600 with General Motor Diesel power, the other a Gardner-Denver with Cat Diesel. Also on the job was a Jaeger pump to handle the rain water collected in the footings.

Near the structure site, Bates and Rogers have their own concrete plant. Here a Johnson batching plant stands amid stockpiles of sand and gravel. A Hough Payloader feeds the hopper from the piles, and a bucket conveyor hoists the material to the top. Ready-mix trucks pull under the batcher for sand and gravel, get water from a tap on the site, and pull away to pass under the cement feeder.

Careful and continuous testing of the materials and concrete are carried on right at the plant. Gilson mechanical testing screen equipment measures aggregate uniformity. Tests for moisture content are also carried on, and the familiar circular U. S. government pan

Koehring clamshell digs pier footings on contract for US 250 overpass structure.

GMC-powered Bucyrus-Erie 22-B dragline with 1¼-yd. Hendrix bucket digs excavation for three piers, part of a total of twelve which will make up overpass structure.

sieves are available for testing sand.

Besides section C-31, which includes the Milan overpass, the Jones Construction firm has sections C-28, 29, 32, and 33 for a total of 18.5 miles of roadwork under construction costing $5.3 million. They have sub-let the dirt portion to D. R. Smalley & Sons, Dayton, O.

The most interesting of these sections is undoubtedly C-28, where Ohio 60 crosses the pike. Here a rivulet of a creek runs across the proposed pavement.

The construction firm has under contract here a large culvert. The structure is 17 feet high and 38 feet wide at base. Because it measured 218 feet in length, the firm constructed a slip form so that after pouring concrete for one section, the form could be pulled forward from under the set concrete readying it for the next section to be poured. The concrete is 2½ to 3 feet thick at the base and tapers to 18 inches at the top. About 20 feet of earth fill will be put on top when it is completed.

Overpass structure construction was under way, too, on the J. A. Jones sections. At Berlin and Mason roads, a GMC-powered Bucyrus-Erie 22-B dragline swinging a 1¼-yd. Hendrix bucket was digging the first of two excavations preparatory to the placing of three piers for the structure. Another is to be dug adjacent to this one, with two like holes across the road, with three piers in each for a total of 12.

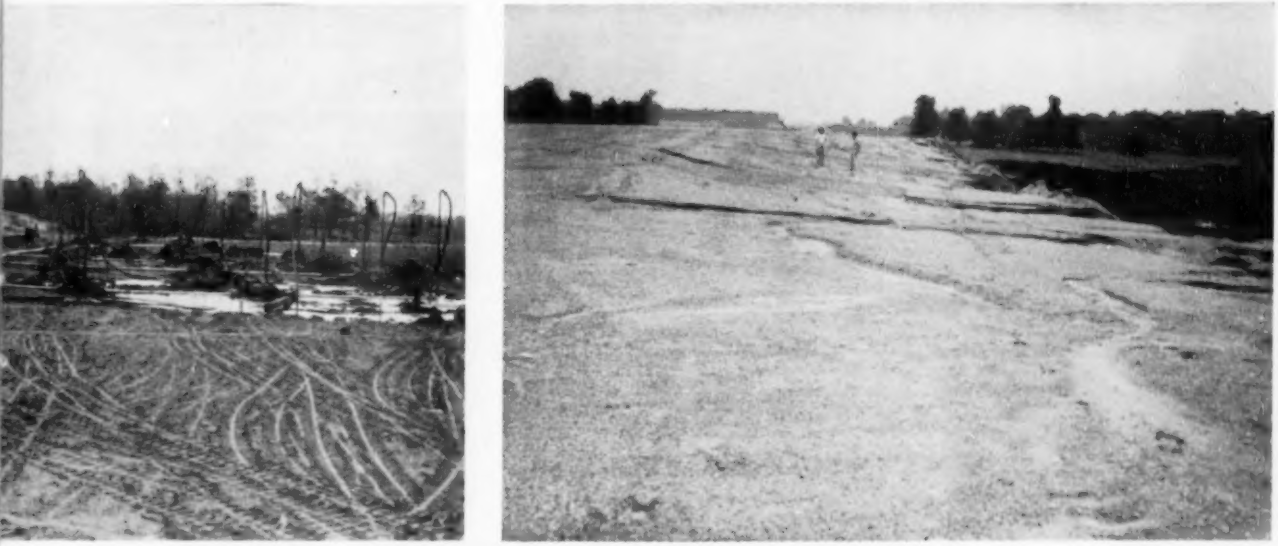
A later stage of the same kind of job was going on at another of J. A. Jones' sites, at Mason Rd. and Ohio 4, where a Cat Diesel-powered Bucyrus-Erie 22-B crane swung a 1-yd. Insley concrete bucket. During the pouring of some 44 yards of concrete for footings, the crew, at intervals, used Mall vibrators powered by Briggs and Stratton one cylinder gasoline engines to settle a pour. Reinforcing material consisted of No. 11 bar mesh steel, which is the same used for the piers.

Also nearby, the crew of D. R. Smalley, subcontractor, was busy laying 30-in. concrete pipe for field drainage into a creek over which a 540-ft. long culvert containing 2,700 yards of concrete was already constructed. A Buda-powered Bucyrus-Erie 15-B ½-yd. dragshovel was handling the ditching. R. F. Barmore of the J. A. Jones Construction Co. is job superintendent and Glenn E. Thomas, project engineer.

Use Concrete Piles

Five miles south of Toledo on US 20, another overpass structure was being built, this one under Johnson-Greene and the Sargent Construction Companies who have C-47, 48, and 49. But here, extensive piling operations were necessary before the pier footings could be poured. To handle the job, the Raymond Concrete Pile Co. brought in their oil fired, steam powered rig and proceeded to sink 14 piles per footing. Solid six-inch piling was sunk for the first 15 to 20 feet, then hollow casing followed, tapering from eight to 14-inch

Marion 151-M dragline swings 8½-yd. bucket while dumping into 25-ton bottom-dump Euclids on part of Western Contracting Company's big-quantity contract sections.



Above: Maze of piping represents system used in jetting 180,000 cu. yd. sand fill which replaced peat deposit. Above right: Men stand at point of most settlement.

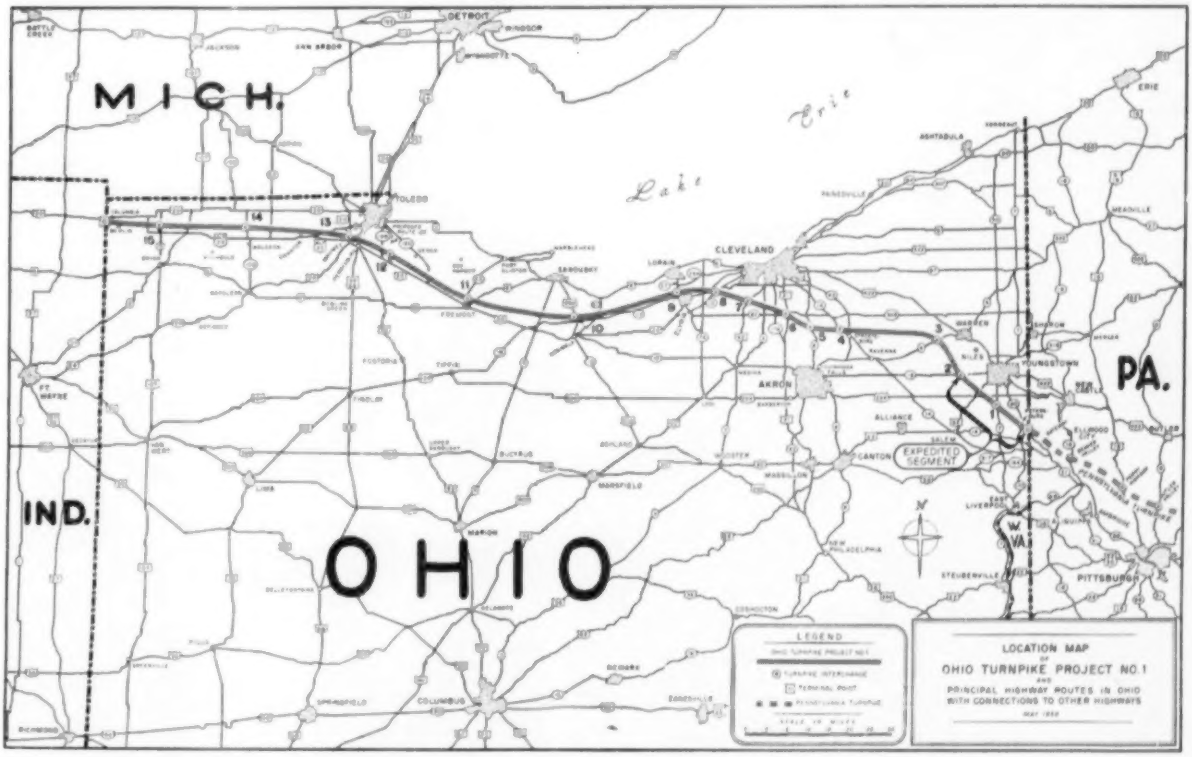
diameter upward, with an average depth of 65 feet being reached. The hollow portion was then filled with bar-mesh reinforced concrete and capped.

A Chrysler-powered Bucyrus-Erie 22-B ¾-yd. clamshell was cleaning out around the piling, preparing the cut for the pouring of footings. On hand for clearing and cleanup work was an International Harvester TD-14 tractor with hydraulic dozer blade.

Twenty-five miles west of Toledo, Excavating Engineer visited the last of its stops on the cross-state treck, contract sections 50, 51 and 52, under the joint venture of Launder & Son, Inc., and Pierce Construction Co.

This overpass, located where Ohio 109 intersects with the Turnpike, was being constructed by the Pierce outfit. Three piered structures were already completed, and the approaches to them had been graded in the immediate vicinity of the proposed overpass. Piling for the span which is to carry over the pike had already been driven on one side, and the Pierce crew was engaged in an interesting test for settle.

Continued on page 66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WARREN
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COLUMBUS
SPRINGFIELD
RICHMOND
LEGEND
OHIO TURNPIKE PROJECT NO. 1
TURNPIKE INTERCHANGE
TERMINAL POINT
PENNSYLVANIA TURNPIKE
SCALE IN MILES
LOCATION MAP
OF
OHIO TURNPIKE PROJECT NO.1
AND
PRINCIPAL HIGHWAY ROUTES IN OHIO
WITH CONNECTIONS TO OTHER HIGHWAYS
MAY 1954

Two hundred and forty one miles of $326 million Ohio Turnpike route shown by heavy colored line across northern edge of state.

Employing Fleco Root Rake, Cat D7 tractor rakes brush into piles on new right-of-way adjacent to old roadbed of U. S. Highway A1A just south of Mantazaz Beach, Fla.

It's Mending Time For Ocean View Highway

Seventeen miles of U.S. Highway A1A, better known to Florida tourists as Ocean View Highway, is being relocated. This is first work on US A1A section since road was opened in 1926.

A VACATION highlight to many of the millions of tourists who annually motor down to the "sunshine state" is the famed Marine Studios, located just south of St. Augustine, Fla., on U.S. Highway A1A. It is here, in huge oceanariums, that the playful porpoises covort to the delight of all.

Heavy traffic to and from the popular spot has resulted in slow death to the famed Ocean View Highway, the highway which literally opened up the beach area from Jacksonville south to Daytona Beach, a section of lush, subtropical growth forming a complete void to the vacationer prior to construction of the road.

This is entrance to Marine Studios on famed Ocean View Highway south of St. Augustine, Fla. Traffic to popular spot necessitated relocating road distance of 17 miles.

The road south of Marine Studios to Flagler Beach has been extremely bad, and it is here that Duval Engineering and Contracting Co. of Jacksonville is relocating and rebuilding 17 miles of A1A that has not been touched since it first snaked through the dense jungle in 1926. Duval will finish the rugged job, which began the 21st of April of this year, by fall.

Likeable Dan Powers, Duval's superintendent on the job, points out "the roughest part of this job is clearing out some of this green hell at points where the road will be relocated. A man sinks up to his knees in this soft sand, and dozing over some of these large hardwoods that go four feet in diameter and more in this loose material is pretty rough. Thank the Lord for tracks!"

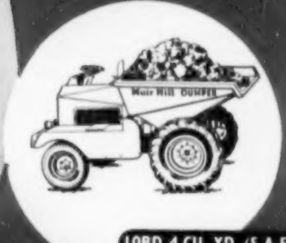
More than 200 acres of hardwood timber consisting of palm trees, hickory and oak are being cleared. In addition, an undergrowth of palmetto and scrub brush, growing so thick in the sub-tropical climate as to make the country impassable on foot, is being uprooted. Cat D7's, equipped with dozers are ripping into the jungle, pushing over everything in the 100 foot wide right-of-way. Then, with the help of a Fleco root rake, the overturned trees are raked into huge 30 foot high piles in the center of the right-of-way. A match touches off the large piles which slowly disappear in the gray smoke.

Before the job started, Dan Powers found a savannah in the center of the 17-mile stretch just off the right-of-way containing all the stabilizing material that he would need. This muck-like material is under two feet of overburden and itself is two feet thick. A P&H 455 dragline, powered with a Cat Diesel engine, is stockpiling the material that will be mixed with sand to form an 18-in. thick stabilizing road base of 55 lbs. bearing.

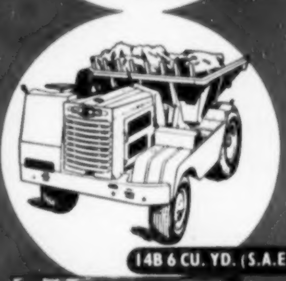
The dragline has also unearthed the remains of giant mastodons and mammoths in the savannah, bones and fossils that had been deposited since the dawn of man and preserved in the muck that had been part of the ocean floor.

More than 130,000 yards of material will be excavated in the construction of the new 24 foot wide road. The road itself will be constructed of a six inch thick layer of sand and bituminous road mix; 251,000 square yards of this material will be used in laying the new 17-mile strip

SMALLER SHORT HAULAGE UNITS MEAN GREATER FLEXIBILITY



10BD 4 CU. YD. (S.A.E.)



14B 6 CU. YD. (S.A.E.)

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Twenty-five years of specialisation have placed Muir-Hill Dumpers right in the forefront for construction use. Compact and tough, simple and economical, with two-way drive and instantaneous gravity tip, they have a wide field of application. Get to know them. Write to us for the full story of Muir-Hill Dumpers.

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Opening up the

HEAP LOADS IN A HURRY. One of Julian Construction Company's seven TD-24s push-loads a new INTERNATIONAL 2T-75 near Wauseon, Ohio. Julian has 1,000,000 cubic yards of dirt to move in sub-grading 7.2 miles of the Ohio Turnpike.

INTERNATIONAL TD-24 crawler tractors, preferred by contractors on toughest phases of Ohio Turnpike construction

An estimated 29,506,100 cubic yards of earth and rock is being excavated and an estimated 46,905,000 cubic yards of borrow and fill will be moved before the 241.1-mile Ohio Turnpike is completed.

A monumental project, requiring the most powerful, most dependable crawler tractors available.

All along the Ohio Turnpike, from the eastern terminus in Mahoning County to the western terminus in Williams County, INTERNATIONAL *TD-24 crawler tractors are taking over the toughest earthmoving jobs.*

With 155 drawbar horsepower, the INTERNATIONAL TD-24 can conquer any big job. And the durability of every TD-24 means less maintenance, downtime, and operating expense, more profit for the owner.

For more details on the new, complete line of INTERNATIONAL earthmoving equipment, including seven crawler tractors with 26 matched blades, two high-speed rubber-tired tractors with scrapers and bottom dump wagons, and four 4-wheeled scrapers, call your INTERNATIONAL Industrial Power Distributor today. While you're at it, arrange for a demonstration on *your* job of INTERNATIONAL equipment "sized" for *your* job.

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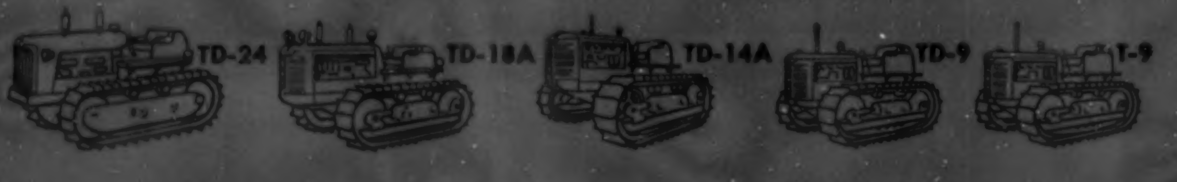

Ohio Turnpike

SMOOTHING A BRIDGE APPROACH. Largest structures on the Ohio Turnpike are twin bridges north of Akron. Over 1,500,000 cubic yards will be moved by Wilco Builders, subcontractors, Brecksville, Ohio, with two TD-24s leading the way.

DOES MORE THAN ITS SHARE FOR CENCI. Subcontractor Nick Cenci and Sons, Inc., Columbus, Ohio, use an INTERNATIONAL TD-24 for the heaviest heaped-loading work. TD-24 recently push-loaded 450,000 yards of earth with no downtime.

LOADS THEM OUT FOR LAUNDER AND PIERCE. An INTERNATIONAL TD-24 hauls a loader on a 28 to 36-inch cut. Contract for this section is held jointly by Launder and Son, Inc., and The Pierce Construction Company, Toledo, Ohio.

SPEEDS SOIL-STRIPPING FOR SMALLEY. Approximately 3,600,000 cubic yards of earth will be moved by D. R. Smalley and Sons, Celina, Ohio. One of their three TD-24s is used to pull a loader on soil-stripping work near Milan, Ohio.

HANDLES THE TOUGH ONES FOR HERKNER. Extensive drainage is required through Summit and Cuyahoga Counties. Herkner Construction Company, Cleveland, uses the TD-24 shown here to handle excavation and drainage pipe placement.

LOADING IN MAHONING COUNTY. Two of D. W. Winkleman's five TD-24s complete fast cycles in spite of soggy going south of Youngstown. Roughly three-and-a-quarter million cubic yards will be moved on this contract.

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SEVEN GREAT INTERNATIONAL CRAWLERS...EACH WITH MATCHED EQUIPMENT FOR EVERY JOB

News from the Field

ARBA Announces Highway Materials-Supplies Exhibit

The American Road Builders' Association has announced that an Exhibit of Highway Materials and Supplies will be held in conjunction with its next annual meeting. The ARBA will meet Jan. 10-13 at the Roosevelt Hotel in New Orleans, La.

The Exhibit will be held in the Roosevelt's modern International Hall. About 14,000 square feet of exhibit space are conveniently located on the same floor where the convention sessions will be held.

This arrangement, according to the ARBA, will result in the largest exclusive exhibit of highway materials and supplies ever held.

Indian Holiday Resort To Play Important Part for Refineries

The Elephanta, a popular week-end resort for holiday seeking people of Bombay, India, is now going to play an important part for two new oil refineries set up on Trombay Island, a mile and half away. Oil jetties are presently being constructed on Elephanta for unloading the tankers bringing crude oil to the refineries.

Two Bucyrus-Erie 22-B shovels have been busy day and night since January 1953 excavating blasted rock and loading it to trucks for the jetty construction. About the only time the shovels aren't working is on religious holidays.

The island is situated about eight miles from Bombay, the "Gateway of India." Its main attraction is the caves which have huge idols of various forms of Hindu gods.

Army Engineers Contract First Airborne Crane

The Wayne Crane Division of American Steel Dredge Co. in Fort Wayne, Ind., has been awarded a research and development contract which covers a new type of self-propelled, rubber-tired airborne crane. The award was made by the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va., according to an announcement by Don L. Douglass, vice president of the local crane manufacturing concern.

The Wayne Crane contract calls for development and fabrication of a small, lightweight crane with a heavy-work capacity, capable of being dropped by parachute from cargo airplanes flying over combat zones. As with all equipment being developed by the Laboratories for air drop operations, the crane must remain within the critical transport limitations of 16,000 lbs.; 37-ft. length; 8-ft. 4-in. width; and 6-ft. 9-in. height. Construction equipment is considered airborne only if transportable as a unit and capable of operation within one hour after delivery.

Bucyrus-Erie 22-B digs blasted rock which is to be used for erecting oil jetties on Elephanta island, popular week-end resort for holiday seeking people of Bombay.

International TD-14A and dozer builds roadway across ditch for dragline as "fill farm" is opened near Opelousas, La.

The crane project is one of several under which airborne combat earthmoving and materials handling equipment is being developed. This equipment is being especially designed under the direction of the Corps of Engineers' Research and Development Laboratories of Fort Belvoir for easy transportation by air to advance areas where road, airfield, and other construction jobs must be rushed to completion.

In airborne tests conducted to date, a 100-horsepower airborne tractor dozer, a four-cubic-yard scraper, a 14,500-lb. motor grader, tractor saws, towed scrapers, and crawler tractors have been successfully dropped. Other items to be droptested include: cranes, air compressors, rock crushers, six-cubic-yard scraper, and rollers.

Foresee Construction Activity Continuing At High Levels

Construction activity in the months ahead will continue at high levels, it became clear in Mid-August when F. W. Dodge Corporation announced its July and seven-month totals of Dodge Reports of contracts for future construction.

The July total of $1,836,935,000 of contracts in the 37 states east of the Rockies set a new July high in Dodge's long history in construction news and marketing; up 2% over July 1953 and 6% above June 1954.

"The narrow lead margin of last month over July 1953 was not surprising, considering the fact that July of last year had an unusually large contract volume," commented Thomas S. Holden, vice chairman of Dodge. In fact, the margin of lead over last year may diminish further in the coming months, since the last half of 1953 showed the highest contract volume of any half-year period yet recorded; it was even larger than the record-breaking first half of 1954.

"There does not yet appear to be any abatement of demand for these classes of building and engineering projects which have dominated this year's contract record," Holden noted.

Also, an all-time new high for the first seven months of any year was broken with a total of $11,088,084,000, up 14% above the first seven months of 1953, and also above the previous seven-month high set in 1951 which included $980 millions in Atomic Energy Commission projects alone.

Dodge pointed out that the monthly average total for the first seven months was $1,584,000,000, and that the final five months need average only $1,271,000,000 to tie last year's all-time 12-month high. The contracts that Dodge reports this summer indicate that families living on construction income likely will be pouring out enormous amounts of money into the stores for Christmas purchases in December.

Seven-month categories compared with the same period 1953 were: nonresidential, $4,049,522,000, up 9%; residential, $4,726,131,000, up 21%; heavy engineering, $2,312,431,000, up 12%.

July categories were: nonresidential, $641,513,000, down 2% from June and 16% below July 1953; residential, $745,440,000, up 3% over June and 14% above July 1953; heavy engineering, $449,982,000, up 26% over June and 20% above July 1953.

Cofferdam Erection Initiates Belle Chasse Tunnel Project

Construction of the Belle Chasse (Louisiana) vehicular tunnel has been underway for the past four months, and according to present plans, is scheduled for completion by late June 1955. R. P. Farnsworth Co., New Orleans, is the contractor.

The purpose of the tunnel is to facilitate the flow of automobile traffic under the not-yet constructed Algiers Cutoff Canal to the proposed new Alvin Callender Airbase. While the tunnel will handle vehicular traffic on Louisiana

Continued on page 40

Frosty OWEN

at HUNGRY HORSE DAM
120
110
100
90
80
70
60
50
40
30
20
10
0
10
20
30° BELOW

In a majority of "run-of-the-mine" jobs and most of the exceptionally noteworthy projects you'll find Owen Buckets handling important digging and material handling operations.

That is true whether it is a bridge abutment, a dam foundation, caisson work, deep trenching, aggregate handling or "what have you."

The Hungry Horse Dam is an example. Thirty degrees below zero weather didn't stop operations or hinder this Owen Bucket in performing the desired service required in deep down digging of frozen clay, shale, etc.

You, too, can depend on Owen.

A MOUTHFUL AT EVERY BITE

THE OWEN BUCKET CO.
6095 Breakwater Ave., Cleveland 2, Ohio
BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA

ESCO box points put more

DIG

IN TRACTOR SHOVELS

— says E. A. LaChapelle, Excavating Contractor, Vancouver, Washington

Digging efficiency goes up— Bucket lip wear is cut

"Adding *ESCO* Box Points to my tractor shovel increased loading and dozing performance more than 20%—without putting more wear on the shovel," says E. A. LaChapelle, Excavating Contractor, of Vancouver, Washington.

"Box points do a much better job than the solid teeth they replaced. I get real operating economy in all types of hard-to-move material. The points break up the material as they bite into it, so the shovel comes away with a full load every time. The heavy-duty shank on an *ESCO* box point adapter just doesn't break off. Box points make the tractor shovel a good tool for brush clearing, too."

Put more dig in *your* tractor shovel. Your *ESCO* dealer has box points and heavy-duty adapters to fit *any* standard tractor shovel. See him today, or write for Bulletin 187-A, Electric Steel Foundry Co., 2143 N.W. 25th Ave., Portland, Ore.

ESCO

Offices and Warehouses: Honolulu, Hawaii; Houston, Texas; New York, New York; Los Angeles, San Francisco, California; Seattle, Spokane, Washington; Centralia, Pennsylvania; Eugene, Oregon; Salt Lake City, Utah. In Canada: Vancouver, British Columbia, and Toronto, Ontario.

ELECTRIC STEEL FOUNDRY CO.

2143 N. W. 25th AVENUE, PORTLAND 10, OREGON 712 PORTER ST., DANVILLE, ILL.

News . . .

Continued from page 39

State Highway 31, the cutoff canal will handle large amounts of barge traffic and act as a link in the intra-coastal canal.

The new tunnel will be 800-feet long, 35 feet wide and 21 feet high, and the lowest point—at the center of the vertical curve—will be about 43 feet below natural ground. Cost of the work performed by the Farnsworth organization will be about $2,377,000.

In order to permit excavation for the tunnel, R. P. Farnsworth engineers erected a cofferdam composed of steel sheet piling in 60-ft. lengths rented from L. B. Foster Co. The cofferdam, which is roughly 400 feet long and 40 feet wide, will enclose one-half of the tunnel. After this portion of the tunnel is completed, the piling will be pulled and re-driven to enclose the other half so construction may be completed on that end of the tunnel.

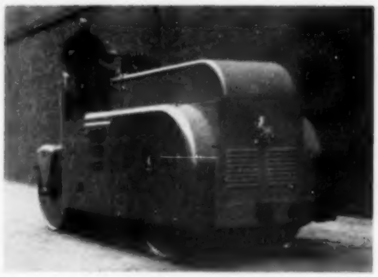
50th Anniversary Counted for Barford Motor Rollers

Just 50 years ago, Barford & Perkins of Peterborough, England, built the first two-wheel, or tandem, motor roller, a machine that was also the first internal combustion powered unit to be designed as such and not as a steam roller adaptation. Production has been continuous ever since, despite the interference of two wars and two factory removals.

In spite of considerable hostility to all mechanically propelled vehicles, interest was aroused right from the "Pioneer's" first public appearance at the 1905 Royal Show. It was sold to a land speculator acting on behalf of the Leatherhead Golf Club. Sister machines were quickly pl.ced.

Barford & Perkins established the motor roller idea so successfully that within

This first Barford & Perkins motor roller inaugurated a roller production line that has grown unbroken through 50 years.



Here's latest Tandem Roller, powered by a 42 hp Diesel engine, introduced into the Aveling-Barford range this year.

the few years to the outbreak of World War I, a whole range of machines from 2½ to 14 tons, was developed and sold into more than 70 countries, including the United States. All but one light model were of the Tandem type, powered by gasoline or paraffin engines.

After building considerable numbers of motor rollers for the fighting fronts, Barford & Perkins set out during the post-war period to maintain its lead in design. Giving serious attention to Three-wheel Rollers for the first time, a design was produced that set a pattern still followed by many manufacturers today, the essentials comprising short wheelbase, low center of gravity, and engine at the extreme rear.

During the Twenties, Barford & Perkins substituted Diesel engines for gasoline and paraffin.

Diesel was barely established before the company moved to Rochester, Kent, to join forces with steam roller pioneers Aveling & Porter. Formal amalgamation followed in 1933, the combined firm, Aveling-Barford Ltd., at once moving to the present headquarters at Grantham, Lincs. Both the Aveling and the Barford ranges remained in production until the end of the second World War.

After supplying considerable numbers of Rollers to the Forces during the War, all pre-war designs except one Aveling Steam Roller, were discarded and replaced by the still current "G" Series three wheel machines.

Portland Cement Appoints New Seattle Office Head

Robert H. Lochow has been appointed district engineer of the Seattle, Wash., office of the Portland Cement Association effective the 1st of August, according to an announcement by Carl D. Franks, Association president. Lochow succeeds Frank J. Barrett, who is retiring after 25 years as district manager of the Association's Seattle office.

Lochow joined the staff of the Portland Cement Association in April 1949, as field engineer for the Seattle office.

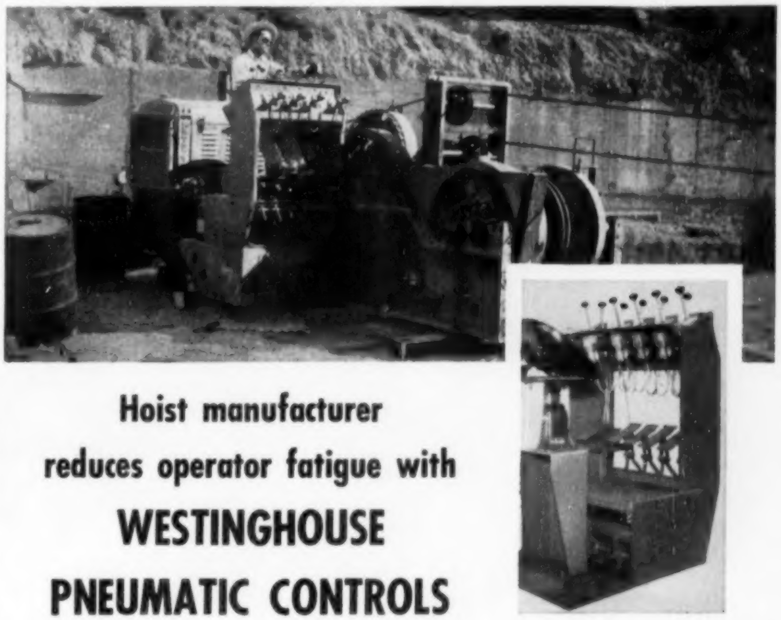
Ground Broken For 40-Mile Louisville-Elizabethtown Turnpike

Ground was broken in late July in Bullitt County, Kentucky, some 15 miles south of Louisville, for the 40-mile turnpike being built between Louisville and Elizabethtown, Glore, Forgan & Co., fiscal advisors to the Kentucky Department of Highways, announced.

Governor Lawrence W. Wetherby, State Highway Commissioner William P. Curlin, and official of cities and towns along the route of the turnpike participated in the ground-breaking ceremonies. Kenneth P. Vinsel, executive vice president of the Louisville Chamber of Commerce, which cooperated with the Department of Highways in arranging the program, presided.

Others besides Governor Wetherby

Continued on page 45



Hoist manufacturer reduces operator fatigue with WESTINGHOUSE PNEUMATIC CONTROLS

• To meet the specific recommendations of iron workers who actually use this steel erection hoist, American Hoist & Derrick Co. controls the diesel engine throttle, clutches, and brakes with a pneumatic system supplied by Westinghouse Air Brake Co. Smooth acting pneumatic control gives fast, automatic operation, makes the machine *easy* to operate, and reduces the chance for error or accident.

Westinghouse pneumatic controls are now giving the same benefits on conveyors, bagging machines, wire drawing equipment, aluminum foil mills, paper machines, and power takeoff devices.

Write for information about the advantages of Westinghouse pneumatic control on your machines.

Westinghouse Air Brake
COMPANY

INDUSTRIAL PRODUCTS DIVISION WILMERDING, PENNSYLVANIA

Manufacturers of air compressors, pneumatic cylinders, actuators, air control devices of all kinds, engineered pneumatic control systems and front end loaders.

Factory Branch: Emeryville, Calif. Distributors throughout the United States . . . See your Classified Directory. Distributed in Canada by: Canadian Westinghouse Co., Ltd., Hamilton, Ontario.

Those Who Use It . . .

MEMO

38.6% of all Hydrocranes Sold are Repeat Orders

Here the Hydrocrane digs a manhole. Every crane function is fully hydraulic—boom hoist, line hoist, swing, boom telescope, outrigger set and retract, and bucket close.

Yes, 38.6 percent of all Hydrocranes sold are additional machines bought by satisfied users. In fact, many owners are now fleet operators — buying a 3rd, 4th, 5th and even a 6th Hydrocrane! Here's real proof that this all-hydraulic truck crane produces big, gives owners an extra profit pay-off.

BUCYRUS-ERIE COM

Choose It Again

Compact Hydrohoe speeds trench job on city street. New wrist-action dipper is hinged to rotate in vertical plane through a 60 degree arc . . . permits operator to vary dipper's position so that teeth bite into ground at best angle.

BUCYRUS ERIE HYDROHOE

Only Hydrocrane gives you all these:

- ★ "Reach-ability" with hydraulically telescoping boom.
- ★ Maneuverability with extremely short tail swing, low over-all height.
- ★ Stability with four hydraulically controlled outriggers.
- ★ Mobility with speeds up to 50 mph.
- ★ "Control-ability" with full hydraulic, finger-tip control.
- ★ Convertibility—quickly changed to dragshovel front end in the field.

Plus more for '54

- ★ Self-power — Hydrocrane has its own independent power unit. (Optional)
- ★ Remote control — start it, drive it, turn it, stop it right from the crane cab. (Optional)
- ★ Selector unit—foot control channels *extra* hydraulic fluid to line hoist bank—gives you 50% faster line speed. (Optional)
- ★ New pressure head — provides even better control of hydraulic pressure.

Arrange a demonstration now!

BUCYRUS ERIE HYDROCRANE
BUCYRUS ERIE HYDROHOE

BUCYRUS-ERIE COMPANY
South Milwaukee, Wis.

Gentlemen:

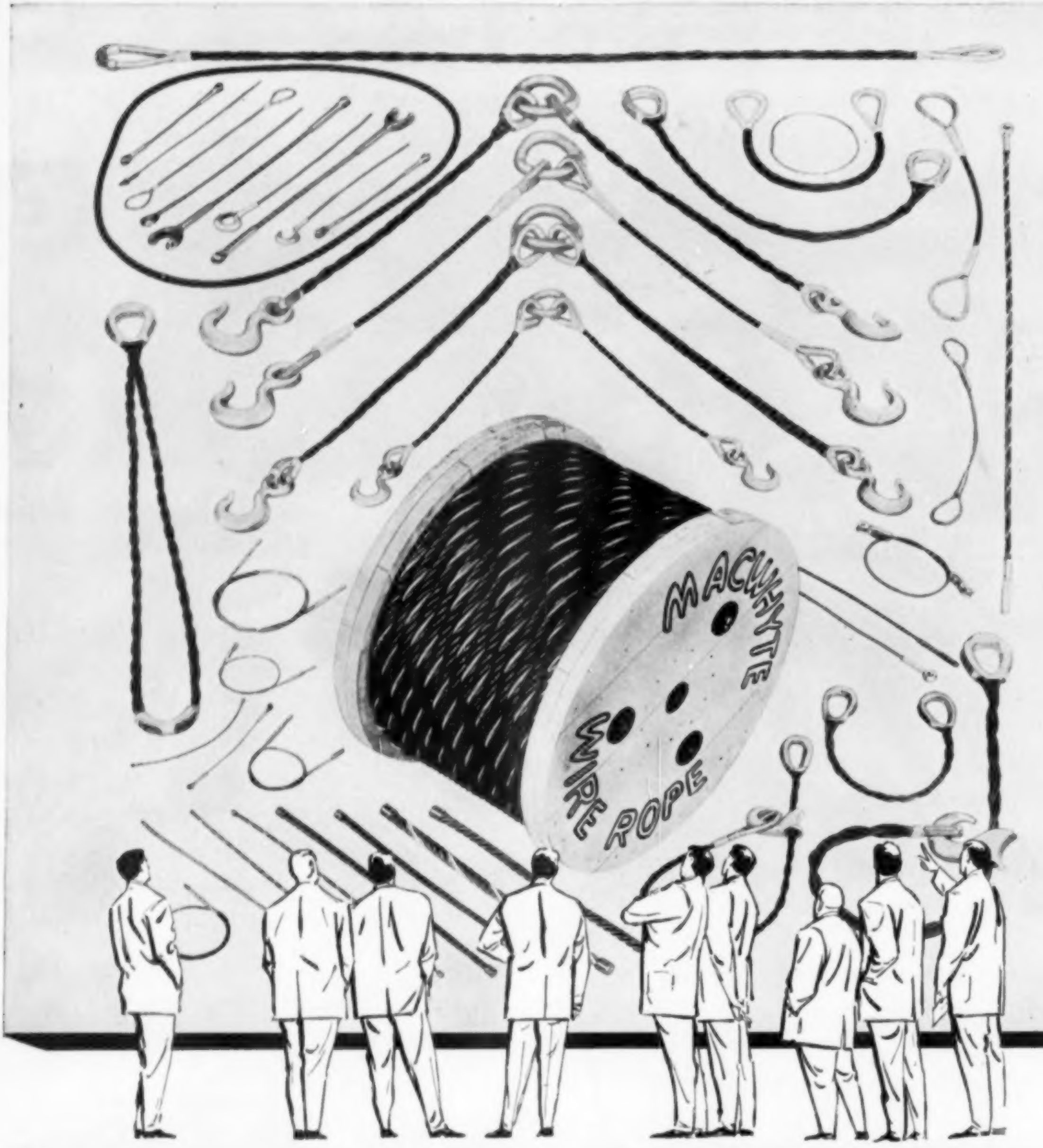
Please send literature on

☐ self-powered and standard Hydrocrane
☐ self-powered and standard Hydrohoe
☐ remote control Hydrocrane-Hydrohoe
☐ wrist action dipper
☐ I am interested in a demonstration

NAME
COMPANY
ADDRESS
CITY STATE

52H54C

PANY South Milwaukee, Wisconsin



These ropes, slings, and assemblies provide a big selection for your needs

Shown above are Wire Rope products developed and manufactured by Macwhyte Company for maximum safety and economy. There are a thousand and one types and sizes of Wire Rope in Bright Steel, Galvanized Steel, Stainless Steel, and Monel Metal; hundreds of types and sizes of Braided Wire Rope Slings for materials handling; a wide selection of Wire Rope Assemblies for machine parts and controls; and Aircraft Control Cables, Assemblies, Terminals, and Tie-Rods for aircraft and other uses.

All these products are available from Macwhyte Company and distributors. Recommendations will be gladly furnished. A Macwhyte distributor will be pleased to serve you or write direct to:

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Galvanized, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies. G-16 Wire Rope Catalog available on request.

Mill depots: New York • Pittsburgh
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1068

MACWHYTE COMPANY, 2903 Fourteenth Avenue, Kenosha, Wisconsin

Cat D7 tractor and dozer levels roadway after clearing away heavy earth on Peak Timbers Ltd. timber range, one of the largest developed timber regions in Africa.

News . . .

Continued from page 41

and Commissioner Curlin who manned the shovels were Vinsel, Archie Cochran, president of the Louisville Chamber of Commerce, Louisville Mayor Andrew Broaddus, Jefferson County judge Bertram Van Arsdale, T. C. Caswell, Elizabethtown City Council member, and Millard Cundiff, Mayor of Shepherdsville.

Construction of the four-lane toll road, for which construction contracts were awarded during the past few weeks, is expected to take about a year and a half. It is anticipated that the highway will be opened to traffic around the beginning of 1956.

Build Extensive Road System for Hauling So. African Lumber

Peak Timbers Ltd., owner of one of the fastest developing timber regions in South Africa, is completing plans for an extensive road system through its timber lands to enable fast, economical cutting, and hauling of the lumber to the mills.

It is estimated that more than 600 miles of road will be necessary to serve the area. To-date, the total road lengths amount to 220 miles of which about 215 have been constructed by a Caterpillar D7 tractor and dozer which was purchased by the company in 1947.

The operation of Peak Timbers Ltd., began during the middle of 1947, then trading under the name of Piggs Peak Plantation Company, with a total holding of 17,000 acres. Peak Timbers Ltd., took over the management in October 1947, and with the support of the Swaziland Administration, rapidly increased this figure to 75,000 acres by 1951. Plans are to plant at least 60,000 acres. At the present the total acreage planted is 47,000, but by the middle of 1954 the company hopes to extend this area to 55,000 acres. The first timber cut will be suitable for boxwood only since it will be so small, but by 1964, it should be at full production.

A timber range of this size and potential requires good operating roads for hauling and it is for this reason that Peak Timbers is continually making additions to its road building and maintenance fleet. The most recent addition has been a Cat D2 tractor, which was purchased to cut fire breaks and to haul timber from hard-to-get-to places to the road side for transportation to the mills. Another Cat D7 tractor is expected to be delivered shortly to help hasten the completion of the roads.

When on road construction, the tractor averages about 300 yards per eight hour day. On occasions, as much as 800 yards have been finished in one day and on others only 50, depending on the terrain and soil conditions. A good deal of blasting is required in many places since the slopes are very steep and rocky. The width of the road is 12 feet of solid ground and is being cut from 2½ feet to three feet deep.

Safety Council Offers Tips On Preventing Job Mishaps

Accident Preventers — the National Safety Council's new employee training leaflets — are packed with illustrations and sound tips on how to stay safe on the job. Using few words but plenty of colorful cartoons, the preventers teach safety to today's worker who is accustomed to the fast visual presentation of television and the picture magazines.

For sample copies and quantity prices write the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

HENSLEY SAVES the Original COST . . .

When the going is TOUGH!

You'll get faster work, less equipment damage, and lower cost per unit-hour when your crawler is Hensley-equipped!

And what's more — there's no need for a separate rig for each job — USE double utility Hensley Equipment.

LIGHTWEIGHT, HEAVY DUTY RIPPERS. Fit all small, medium and large dozers. Penetration 8" to 18". Excellent tool where grade has been lost and for corner cuts.

HEAVY DUTY ROCK END BITS for D-6, D-7 and D-8. Engineered for penetration and lasting wear.

D-6, D-7, D-8 and HD-10, HD-20 BOTTOM TRACK ROLLERS and roller parts — machined to roll true with a minimum of wear.

Write for free Catalog — today!

P. S. Dealerships available in some areas — check today!

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EQUIPMENT COMPANY
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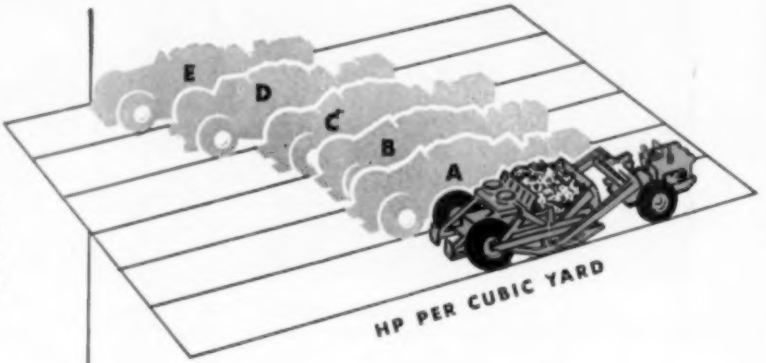
COMPARE POWER, BALANCE AND TRACTION AND

Why Allis-Chalmers Motor Scrapers

Examine the Allis-Chalmers TS-200 or TS-300 Motor Scraper point by point, feature by feature. Then let your Allis-Chalmers dealer demonstrate what these features mean to you in terms of bonus yardage and dependable performance.

See how fast Allis-Chalmers Motor Scrapers accelerate to "get the jump" on normal production from the moment they leave the pusher. See how safely they high-ball with a full load . . . how fast and steady they pull through the deep fill and return, up grade, to start a new cycle. Compare these Motor Scrapers on the basis of work done per dollar of investment. We think you'll agree an Allis-Chalmers Motor Scraper is your *number one* earth-moving value.



ACCELERATES FAST

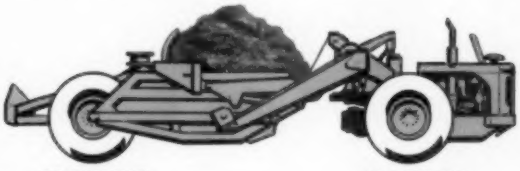
The TS-200 develops 17.6 hp per cu yd struck capacity . . . the TS-300 develops 20—the highest ratios in their respective classes. With more power to move the payload, these machines get away from the pusher *fast* and maintain high average speeds throughout the entire cycle.

PERFORMANCE MAKES DOLLARS WHEN DESIGN

YOU'LL SEE

Out-produce

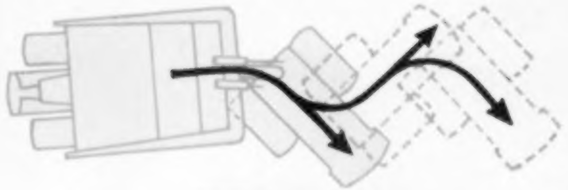
WEIGHT DISTRIBUTION LOADED

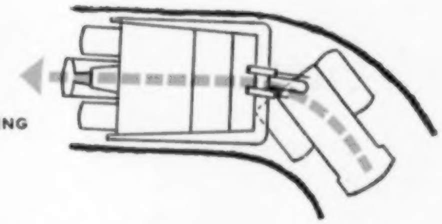


HIGHBALLS WITH THE PAYLOAD SAFELY

Loaded, the Allis-Chalmers Motor Scraper has equal weight on all four tires. This ideal weight distribution, together with low center of gravity, direct hydraulic steering which eliminates jack-knifing, and big air brakes on all four wheels, allows the Allis-Chalmers Motor Scraper to take advantage of its high hp ratios by maintaining fast, yet safe haul speeds.

DUCK-WALKING





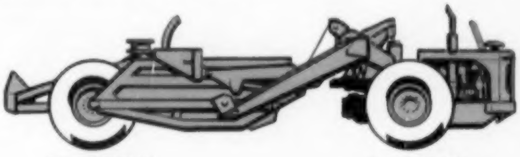
MANEUVERS EASILY

There are no steering brakes to rob you of tractive power. Instead, direct hydraulic rams turn the tractor in the desired direction of travel. Steering is sure and positive—even going down extremely steep slopes in loose footing.

By swinging tractor left and right with the steering rams, the Allis-Chalmers Motor Scraper can duck-walk through heavy going where others bog down.

Backing up in close quarters is simple. Two-wheel tractor has complete control over scraper body . . . can even change directions without forward or backward movement.

WEIGHT DISTRIBUTION EMPTY



COMPLETES THE ROUND TRIP QUICKLY

The return trip from the fill is usually uphill. That's where two-wheel design pays off. When empty, 66 percent of the Motor Scraper's weight is carried on the traction wheels. There are no front wheels to rob drive wheels of tractive weight or to create rolling resistance in heavy going. This enables the Motor Scraper to make the round trip faster and usually in higher gear than other units.

MAKES SENSE

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Equipment You Ought to Know About

Crane Carrier

Manufacturer: Schield Bantam Co., Waverly, Ia.

Claims: A low cost, 6 x 6 crane carrier has been completely remanufactured for mounting of the Model T-35 Schield Bantam power crane-shovel. The Carrier will be known as the Model "200".

The Bantam "200" Carrier features all-new GMC six-cylinder engine, radiator, one-man cab, brake system, instruments, and steering gears. Reinforced main frame, and completely rebuilt secondary assemblies are additional features.

According to Company officials, the "200" will give owners a carrier with 40 mph road speeds. It provides plenty of power to work in rough going. Two-speed transmission offers 10 forward speeds, two in reverse with six-wheel drive to provide extra traction. The rig has a short turning radius enabling owners to work with the rig in cramped quarters where space is at a premium.

Arc Welder

Manufacturer: Harnischfeger Corp., 4605 W. National Ave., Milwaukee, Wis.

Claims: The P&H model DA-200 in a single machine provides both AC and DC welding. A flip of the switch gives the desired welding current. It's possible to change from one current to the other while welding to take advantage of the characteristics best suited for the work. This assures best possible welding results while speeding the job and cutting costs.

Now in volume production, this new P&H Welder has an AC welding service range of from seven to 275 amperes and seven to 200 amperes DC. It operates on 220/440 volt, 50/60 cycle current, single phase. It is equipped with P&H Dial-lectric control which provides instantaneous heat selection. For remote control, the radio-type dial may be taken to the work. There are no moving parts in the machine.

Cutter

Manufacturer: H. K. Porter, Inc., Somerville, Mass.

Claims: The new one-hand 8T Cutter has been designed for cutting steel strapping and wire binding in shipping rooms.

For longer cutting life there are heat-treated blades. For hand comfort there are plastic cushion grips which prevent blisters and keep hands from slipping. For faster operation there is a spring which keeps tool open to cutting position and a thumb lock which keeps tool safely closed when not in use. It's light weight yet powerful; compact in design to fit into pocket. Even the pivot bolt is especially designed to always stay tight.

The sharp pointed lower jaw fits easily under the tightest strapping or baling wire for quicker cutting and the thin, flat blade prevents damage to either container or contents. A notch in the lower blade keeps round wire in position for cutting—the wire won't slip out, and a "keeper" makes sure that strapping or wire stays straight in the jaws when pre-cutting.

Arm-Type Hoists

Manufacturer: Gar Wood Industries, Inc., Wayne, Mich.

Claims: A new line of standard duty, arm-type hoists, trade-named "Strong Arm," and a line of matching dump bodies have been announced by the manufacturer.

Strong-Arm hoists offer greater value at no extra cost over previous models because new design provides (1) 14% more lifting capacity, (2) longer hoist life because of better engineered construction, and (3) easy maintenance without special tools or hydraulic specialists.

Tapered cylinder heads on Strong-Arm hoists permit low mounting for greater lifting leverage, less strain on the hydraulic system, and a faster dumping cycle. The hoists also have an advanced lifting point to do more work with less effort, so strains on body, hoist and pump are reduced for longer life. The hoists have a dumping angle of 55°.

A rugged tubular torque tube insures

Continued on Page 50

THE No. 12 MAKES BLUEPRINTS COME TRUE

This No. 12 Motor Grader, owned by Daley Corp., is bank-sloping for a canal along the new Wabash Freeway, San Diego, Cal.

When the engineers ask for a clean 40-degree bank, put a Cat* No. 12 Motor Grader on the job. You'll get it, right down to fractions of an inch. And the best of it is that any good operator can work accurately with this machine. Here are some of the features that make the No. 12 outstanding:

- Caterpillar-built throughout, with balanced power, weight and speed.
- A steady-going 100-HP engine directly powers all controls, eliminating leaky hydraulic lines.
- Operates on low-cost No. 2 furnace oil without fouling.
- Full range of blade positions without changing links.
- Powerful control brakes prevent creeping under loads or vibration.
- Rugged construction—heaviest box-section drawbar circle on any grader.

Don Daley, of Daley Corp., San Diego, with ten big yellow units working on the Wabash Freeway, says: "Every year our faith in Caterpillar's engineering features, economy, long life, trade-in value and good dealer service is strengthened. The machine that stands up longest and does the job is the one to make money with."

Call your Caterpillar Dealer today for an on-the-job demonstration of the equipment that can make money for *you*.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

50 YEARS ON TRACKS

50 YEARS ON TRACKS 1904-1954

CATERPILLAR

1904-1954

New Equipment . . .

Continued from page 49

equal lift with both arms, ending one-side strain even on uneven ground. The lift arms are integrally welded with the torque tube. Simple toggle action of the torque tube eliminates extra moving parts. Stronger, lighter tubular construction throughout reduces dead weight and increases hoist service life.

Hoist cylinders are of three-piece construction—head, tube and base—held together by an exclusive tie-rod assembly. Nothing is welded to the cylinder, which pivots on a massive, rigid trunnion. Each individual cylinder part is easily removed or replaced. All repairs can be made with standard truck tools.

Hoist pump is a Gar Wood three-piece laminated unit. Small, compact, and easy to mount, the high capacity pump is anti-friction bearing mounted for quiet, long trouble-free service. The three-piece pump housing insures precision operation.

Direct pump-to-cylinder hose connection allows the pump to be connected to the power take off with straighter, shorter drive on any chassis. The elimination of sharp drive angles reduces drive and universal joint wear.

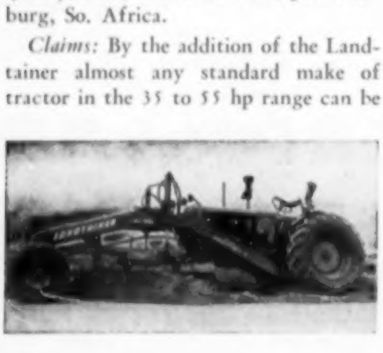
An exclusive reservoir built into the cylinder head, insures adequate oil circulation to pump at all times. Three safe-guards against overtravel damage to hoists are provided: Positive backstop; dimpled oil passages in the cylinder; and cylinder head springs.

New Gar Wood standard duty bodies will be known as the "GA" series. They consist of general contractors bodies, coal and coke bodies, combination dump and platform bodies and scow end garbage bodies. A total of 12 standard bodies comprise the series.

Motor Grader Converter

Manufacturer: Landsborough Findlay (S.A.), Ltd., P.O. Box 5863, Johannesburg, So. Africa.

Claims: By the addition of the Landtainer almost any standard make of tractor in the 35 to 55 hp range can be speedily converted into an efficient road-grader. All that is necessary to make the conversion is to take the front axle and wheels from the tractor and fit them to the Landtainer. Couple the Landtainer to the front end and rear axle of the tractor and connect the extension steering gear and flexible fluid pipes.



This sturdily constructed machine has readily withstood the heaviest shocks and roughest usage encountered in normal operations, such as road-grading, levelling, banking, terracing, and ditching, the manufacturer reports. Complete unit, Tractor and Landtainer, can also be supplied.

The main frame of the well balanced unit consists of a steel-channel, fork-shaped structure of adequate strength for carrying the powerful hydraulic lifting jacks and blade assembly. These jacks are powered from geared-type pump and are operated via finger-tip controls arranged conveniently for the driver. Raising and lowering the blade assembly is effected hydraulically by means of these jacks, which are self-aligning, while full side shift, rotation, and tilting of the blade is obtained manually for all positions required in normal operations.

By simply slackening the bolts securing the blade to its shaft, a 15-in. maximum side shift is possible. By ground contact the blade can be rotated 90° horizontally, a locking-pin being provided, which, when operated by the driver, rigidly locks the blade in any desired angular position.

The 10-ft. blade is fitted with ½-in. x 6-in. standard grader cutting edge. For tractors in the 35 hp range the blade depth is 14½-in. and 18½-in. for tractors of 45 hp. Blade lift clearance above ground being 10-in. and 12-in. respectively.

An important feature of the Landtainer is its long wheelbase and well-positioned blade assembly which helps eliminate any tendency of the blade to whip, chatter or bounce, the cutting edge being neither too near, nor too far away from the rear-axle driving force.

Off-Highway End Dump

Manufacturer: Dart Truck Co., Kansas City, Mo.

Claims: Latest of a series of new model off-highway end dump trucks recently announced by Dart Truck is a 20-ton capacity truck. Its short wheelbase and high horsepower allows for a high degree of maneuverability, according to the manufacturer. The wheelbase is 120 inches, slightly more, for instance, than the small Studebaker Champion which is listed at 116½ inches. Hydraulic steering whips the truck around a circle with 21-ft. radius.

The truck is powered by a Diesel engine, 225 or 275 hp (optional) and is available with conventional transmission or torque converter. Two stage springs, front and rear are long for a design of such short wheelbase, but they provide easy riding loaded or unloaded and offer protection to tires and the truck itself.

The unusual design is a stocked model in the Dart line and fills the need of a high capacity, heavy-duty truck working in cramped areas underground or in pit operations where short turns and high horsepower are a requirement.

Remote Control Crane

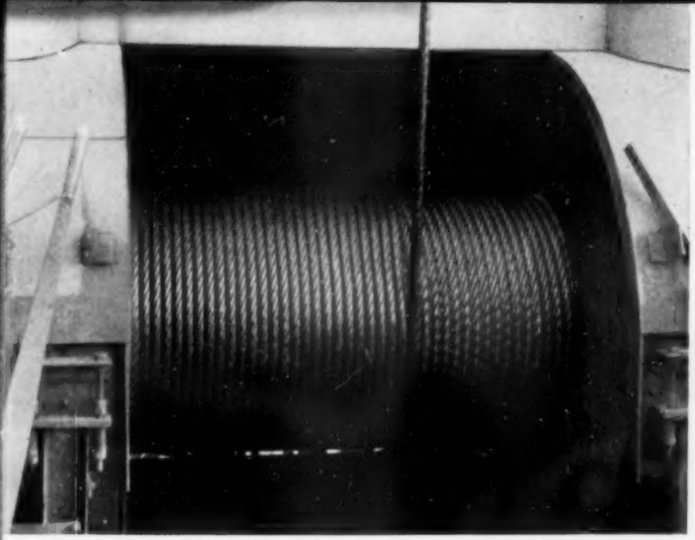
Manufacturer: Bucyrus-Erie Co., South Milwaukee, Wis.

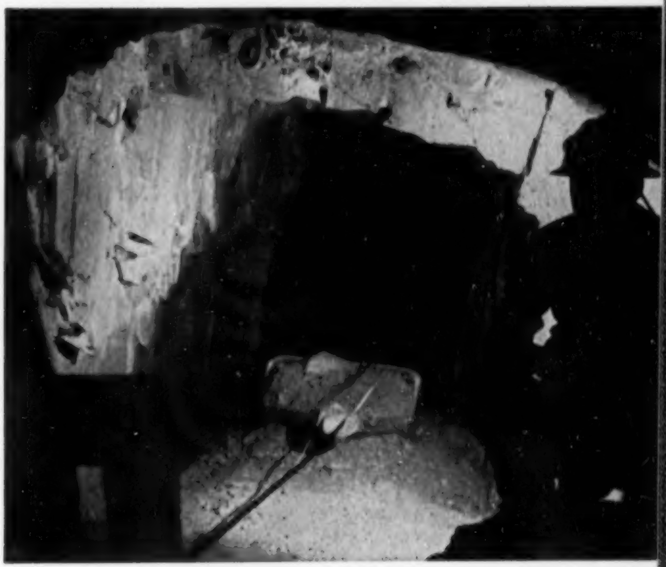
Claims: Both the Hydrocrane and Hydrohoe—all-hydraulic truck crane and dragshovel respectively—are now available with remote control. Designed for use where frequent short and accurate moves rather than speed are important, remote control permits simultaneous operation of the motor truck and Hydrocrane or Hoe, on short moves in first or reverse gears, from the operator's station on the crane deck. Remote control also provides the advantage of power steering for accurate maneuvering in tight quarters.

An outstanding feature of the remote control unit itself is its compactness. There are only three basic parts: air supply, control valves, and actuating cylinders.

Compressed air from the air brake storage tanks is delivered to the control panel at the operator's station. Finger-tip levers operate valves directing air to the actuating cylinders for motor truck clutch, brake, gear shift, and steering arm. Air travels through small flexible air hoses which pass from the revolving frame through the center pin and

Continued on page 53





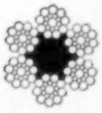
OVERCOMING ABRASION—Wire rope takes a beating on some jobs by abrasion. It is squeezed in multiple layers under tremendous pressure on rotary drilling drums in the Texas oil fields. In the Northwest it drags under heavy logs. In this Arizona mine it is scraped over rocks to operate a slusher. Everywhere it is rubbed severely on winches that do not wind smooth. Under such conditions Red-Strand 6 x 19 Seale wire rope will last longer and save you money.

What can you do better with 6x19 Seale Red-Strand?

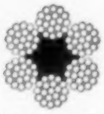
6 x 19 Seale has the same strength and weight as the more frequently used 6 x 19 Filler Wire, but the arrangement and size of the wires is different. You can see in the diagrams that the outer wires are fewer in number and larger in size. They provide *high resistance to abrasion* and greater wearing quality with somewhat less flexibility.

It's the perfect rope for certain jobs. Would it solve a problem for you? Be less trouble? Save more money? A Leschen man is near you. Perhaps he can help. Leschen is providing *longer-than-expected* wire rope service to industry everywhere.

Send for the 64-page Leschen Wire Rope Handbook. It describes Seale and all other Red-Strand wire rope constructions.



6 x 19 Seale



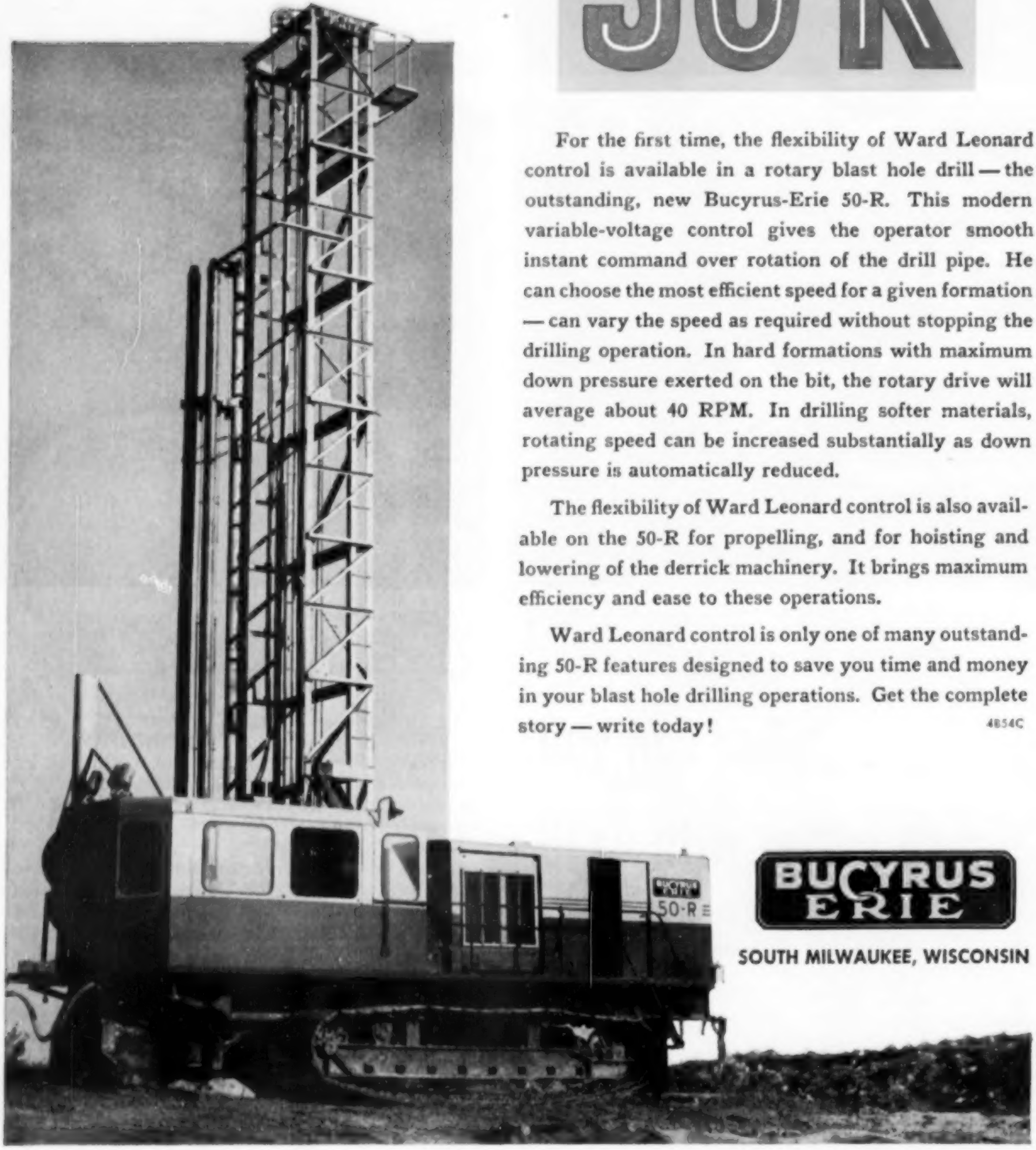
6 x 19 Filler Wire

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

LESCHEN
HERCULES Red-Strand
WIRE ROPE

Your Choice of Drilling Speeds for Maximum Footage

BUCYRUS-ERIE 50-R



For the first time, the flexibility of Ward Leonard control is available in a rotary blast hole drill — the outstanding, new Bucyrus-Erie 50-R. This modern variable-voltage control gives the operator smooth instant command over rotation of the drill pipe. He can choose the most efficient speed for a given formation — can vary the speed as required without stopping the drilling operation. In hard formations with maximum down pressure exerted on the bit, the rotary drive will average about 40 RPM. In drilling softer materials, rotating speed can be increased substantially as down pressure is automatically reduced.

The flexibility of Ward Leonard control is also available on the 50-R for propelling, and for hoisting and lowering of the derrick machinery. It brings maximum efficiency and ease to these operations.

Ward Leonard control is only one of many outstanding 50-R features designed to save you time and money in your blast hole drilling operations. Get the complete story — write today!

4854C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

New Equipment . . .

Continued from page 50

thence to the appropriate part of the truck chassis.

Throttle control is accomplished by means of an automotive master cylinder and slave cylinder. The master cylinder is located near the revolving deck, and is actuated by a foot pedal extending through the deck. It delivers hydraulic fluid to the slave by means of a flexible hose which passes through the center pin and terminates at the carburetor. A spring loaded latch engages the foot pedal to hold it at full throttle when operating as an excavator. Stepping on both simultaneously disengages the latch.

Truck air brakes are included as part of the remote control "package." A low pressure air buzzer system with air signal whistle—a safety requirement for trucks equipped with air brakes—is installed in both truck and operator cabs and is connected in series. Two air storage tanks are also provided, especially important for cold weather operation.

An engine ignition switch and starter button in operator's cab plus a safety cutoff switch are added features.

Although the equipment will function on hard ground with normal engine to wheel gear ratios, the use of a two speed rear axle will deliver maximum ratio and will assist in smooth action on difficult terrain.

Tractor-Shovel

Manufacturer: Frank G. Hough Co., 708 Seventh St., Libertyville, Ill.

Claims: A recent addition to the line of torque-converter-driven "Pay-loader" tractor-shovels is the model HRC, a 4-wheel-drive unit with bucket capacity of one cubic yard struck-load and 1 1/3 cubic yard payload (heaped).

This new model is available with either gas or Diesel engine and is equipped with power-steering for ease of operation and maneuverability. Another note-worthy feature, according to the manufacturer, is the Hough heavy-duty full-reversing transmission which provides four speed ranges in either direction.

Greater production resulting from faster operation is claimed for this new "Payloader" tractor-shovel as the result of the new torque-converter drive. Much less effort and concentration on the part of the operator results from a considerable reduction in the amount of "clutching" and gear-shifting necessary.

The torque-converter also acts as a cushion for the entire powertrain and minimizes maintenance and prolongs machine life.

The original "quick tip-back" action of the hydraulically-controlled bucket automatically positions the bucket for digging, making it unnecessary for the operator to "find" the location of the bucket when returning to grade or digging position.

Front-End Attachment

Manufacturer: International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Claims: The new Drott "Four-In-One" hydraulic controlled attachment has been designed for the International TD-6 crawler tractor.

Now available through International Industrial Power distributors, the "Four-In-One" can be immediately converted into a bullclam shovel, a bulldozer, a front end loader or a clamshell by merely placing the "shovel-selector" lever in the desired position. Lever is located within easy reach of the operator and shovel selection can be made either when tractor is in motion or standing still.

As a bullclam shovel, the attachment is used for sanitary landfill operations and to transport dirt on short hauls. With the clam open, the shovel becomes a bulldozer. Depth of cut is regulated by the forward and backward pitch of the blade, rather than by the lifting and lowering of push beams as on conventional bulldozers and front end shovels.

In the front-end loader position, the "Four-In-One" has the same roll back at ground level as a standard Drott front-end loader. The bottom dump feature of the unit in this position gives it a clearance of more than 14 feet above the ground.

For picking up stock-piled or other loose material in confined operating areas, the operator merely has to place the "shovel-selector" in the clamshell position. When loading and transporting, the bucket may be rolled back and semi-skidded on the ground as in front-end loader operations.

In addition to the four shovel features, the unit may also be used as a backhoe.

Overall width of the "Four-In-One" is 68 inches. Height is 40 inches. Shovel capacity is ⅞-yd. with lifting capacity of 3,000 lbs. Break-out force is in excess of 8,500 lbs. Overall weight of "Four-In-One" and the International TD-6 crawler tractor is less than 9,000 lbs.

Rear-Dump Trailer

Manufacturer: Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

Claims: The new PR 21 Rear-Dump Trailer has been introduced as a high production teammate of the Caterpillar DW21 tractor. The new PR21-DW21 team, hauling 31 tons or 22.5 heaped yards (based on one to two slope) of any material at speeds up to 20.0 mph,

Continued on page 54

"FASTER from FOSTER"

RENT INTERLOCKING STEEL SHEET PILING

ALL LENGTHS & ALL SECTIONS TO MEET ALL YOUR JOB NEEDS

Foster's lower rental rates on all standard piling sections give you a low fixed expense as an added competitive advantage when bidding on jobs. RENT: Light-weight Corrugated Steel Sheet Piling—Pile Hammers and Extractors.

Send for: Piling Chart EE-9

L. B. FOSTER co.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
HOUSTON 2 • LOS ANGELES 5

New Equipment . . .

Continued from page 53

is the first product of its type in the Caterpillar-Athey equipment line.

The trailer features a wide, open-mouthed body that makes an easy target for shovels, draglines, clamshells, chutes or other overhead loading devices. The body has a low overall loading height, averaging 9-ft. 5-in. and 6-ft. ½-in. at the rear. A wide shield extends across the body to protect the tractor and operator. The body is sturdily constructed of ⅜-in. high-strength steel and has a sandwich bottom with ¾-in. armor-plate as top layer, heavy oak planking filler, and a ⅜-in. bottom plate. The hardest rock fails to make a dent in this shock-absorbing construction. Axle members are of structural steel and axles bolt into place.

The tread of the trailer is 115 inches, which provides additional stability for high-speed hauling. The trailer has an all-welded, frameless design that counteracts and absorbs twist and torque, reducing material failures. The tractor's constant mesh transmission has five gears, ranging from 2.16 mph to 20.0 mph to match any hauling or ground condition. Big 24:00x29—36 ply, rock-grip tires are used all around to provide flotation and traction. 24:00x29—24 ply tires are offered as an optional arrangement. Tires and wheels of tractor and trailer are interchangeable. Drawbar and draft connection are welded, one-piece construction, with 1-in. bottom plate, ¾-in. top plate, and ⅝-in. side plates.

The DW21 is powered by a 6-cylinder Cat Diesel engine that produces 225 hp at 1900 rpm. The 5⅛-in. x 6-in. bore and stroke engine burns No. 2 domestic burner oil. Premium fuels are not required. The unit steers hydraulically with two double-acting pistons pivoting the tractor 90° in either direction. This provides an exceptionally low turning radius of 16-ft. 9-in. with the body down or 13-ft. 5-in. with the body up. The units turn in a 34-ft. width without stopping. The tractor is started by an independent, two-cylinder gasoline-starting engine. The engine, started by an electric-starting system, pre-conditions the Diesel for immediate use.

The trailer has two Athey three-stage, hydraulic hoists which lift the body to a 60° angle to spill the entire load. Power for the hoists is provided by a hydraulic unit mounted on the rear of the tractor. Lip of the body extends well to the rear of the tires to throw the load away from the wheels and over banks with the wheels a distance from the rim of the bank. With the pivot on the body, the rear wheels will draw closer to the braked front wheels, or, if the rear wheels are braked, the front wheels will draw closer to the rear wheels, as the load is dumped.

The trailer is interchangeable with the Cat No. 21 scraper and uses an identical hitch. This offers an interchange versatility to equipment users. It rounds out a line of 10 haulers for

HERE'S HOW SAUERMAN HELPED A MILL GO UNDERGROUND...

A southern cotton mill needing additional space, decided to go underground and add another floor level below the existing building. Fiske-Carter Construction Co. was selected to do the excavating. Since clearance under the building averaged only about three feet, they used two Sauerman ⅓-cu. yd. Crescent Scrapers running parallel to the columns under the mill to dig the earth and haul it to a central bay. A third scraper, working at right angles, hauled the earth out through a window.

Sauerman Crescent Scrapers are capable of doing the unusual and difficult jobs, as well as commonplace excavating, hauling and stockpiling for storage or delivery. There is a type of scraper that can be economically fitted to almost any materials handling project. Sizes range from ⅓ to 15-cu. yds. Low in first cost, they are economical to maintain and combine great durability with light weight.

Write for Sauerman News-Digest #137 describing the Fiske-Carter story in more detail. Ask for Catalog J which shows Sauerman Scrapers handling a variety of materials in various job applications, including their use with boom machines. Sauerman Bros., Inc., 574 S. Clinton St., Chicago 7, Ill.

SAUERMAN BROS., Inc.

use with Cat rubber-tired tractors and is offered by Caterpillar dealers throughout the world. The 10 models range from the 7-cubic yard No. 10 scraper to the 31-ton PR21.

Crane Gantry

Manufacturer: Northwest Engineering Co., 1506 Field Bldg., 135 S. La Salle St., Chicago 3, Ill.

Claims: A new type of gantry, known as a mast type gantry, has been made available for Northwest Model 6 cranes and draglines.

This gantry which replaces the gantry formerly used on these machines, increases the ease and speed in lowering the gantry for low clearances when traveling or shipping. The gantry is extremely simple and rugged in design and it is furnished with section boom hoist rigging with pendent lines.

Users of Northwest Model 6 machines in the field will also be interested in the fact that the mast type gantry is available to replace the old standard or rearward type gantry formerly used on these rigs.

Steam Generator

Manufacturer: McKiernan-Terry Corp., 15 Park Row, New York, N. Y.

Claims: The McKiernan-Clayton steam generator has been engineered specially for supplying power to pile hammers. A complete steam producing unit which operates automatically, the new generator delivers full pressure steam of less than 1% moisture in three minutes from a cold start.

The generator rated at 110 hp will run McKiernan-Terry 10B3 and all smaller double-acting hammers, both E4 and E2 extractors and the S5 and S3 single-acting pile hammers.

Fuel costs are said to be reduced by

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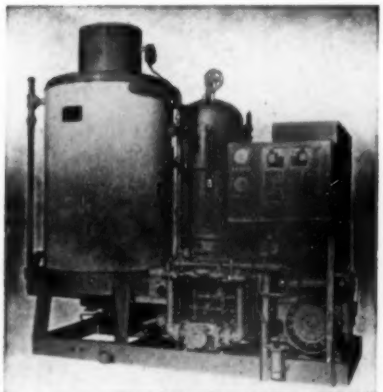
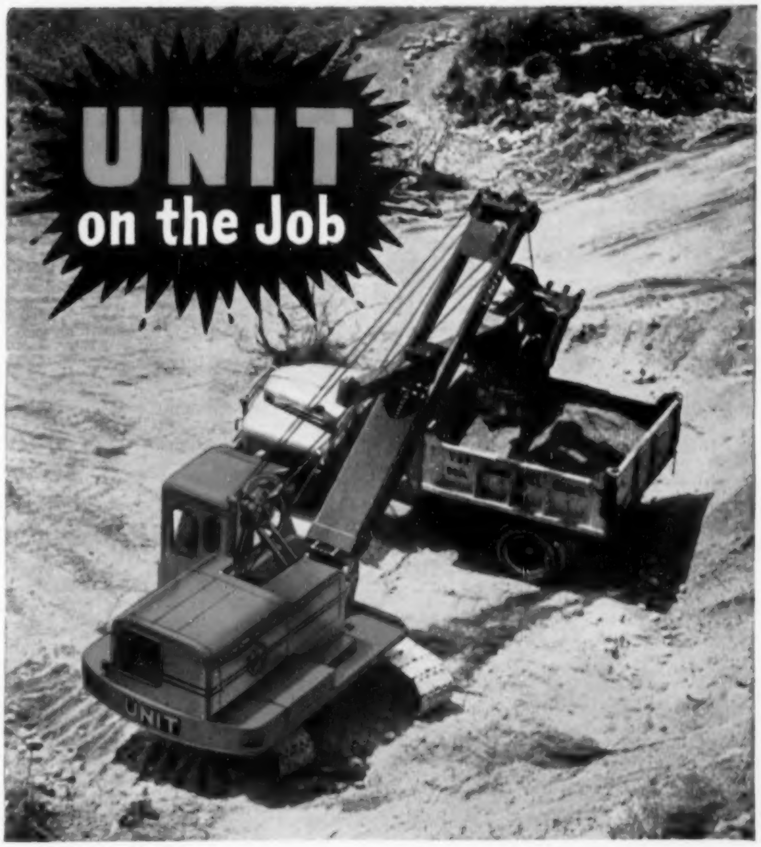




SWING SPEED makes PAY LOADS!

Here's a UNIT ½ Yard Shovel doing a PRODUCTION DIGGING JOB in a gravel pit. UNIT owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction and the many mechanical features, plus the ECONOMICAL PERFORMANCE and LOW UP-KEEP which all add up to EARNING POWER. Why not investigate what UNIT can do for you — on YOUR next excavating and material handling job?

SEE FOR YOURSELF: *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

UNIT CRANE & SHOVEL CORPORATION
6613 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

UNIT

½ or ¾ YARD EXCAVATORS . . . CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

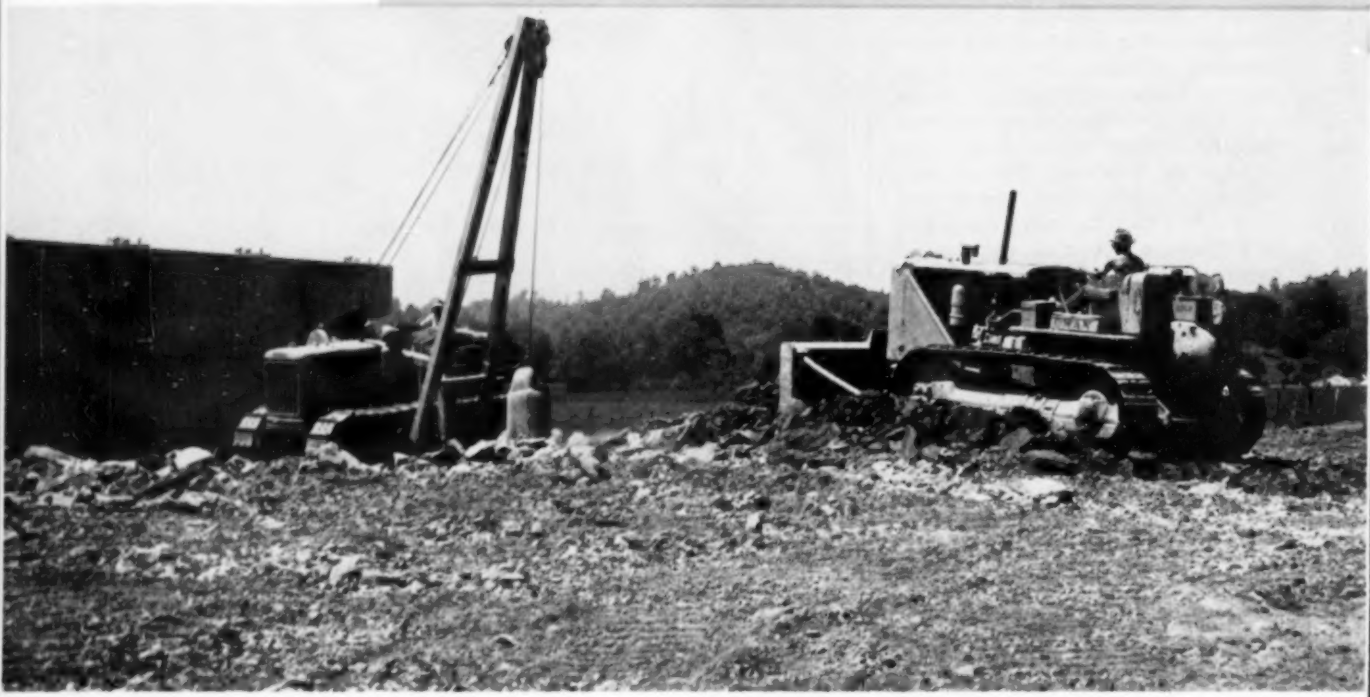
SHOVEL
DRAG
CLAM
HOE
CRANE
MAGNET

All Models Convertible to ALL Attachments!

A 7147-2/3-PC

On the
West Virginia
Turnpike

a D7 with sideboom cuts rocks down to size!



For a tough job on the West Virginia Turnpike, Oman Construction Co., Nashville, Tenn., used a strong-armed Caterpillar team.

The job was to push up a 20-foot-high fill for an underpass. Rock was brought in at the rate of 275 loads a day. But specifications were rigid on the size of rock to be used in the fill.

So Oman put a 5000-pound weight on the sideboom of a pipe layer-equipped CAT* D7 Tractor to break rocks to required size. This is an example of the versatility of these units which can lift many tons with ease. Cat Pipe Layers are essentially mobile cranes which can get in and out of rough ground conditions while carrying loads. There are five models available with lifting capacities up to *83,600 pounds.*

In addition to the D7 working with the sideboom unit, Oman had on the job seven DW21s, more than twenty D8s and three No. 12 Motor Graders.

Everywhere along the rugged, mountainous terrain of the 88-mile West Virginia Turnpike contractors had similar Caterpillar-built fleets.

Job-wise contractors know it makes sense to standardize on Cat equipment. Not only do you have equipment that can handle a variety of jobs without costly down time, but operators and mechanics become familiar with one make. And, of course, you have the advantage of one-stop service from one dealer.

He's the man to see when you have important work coming up. He has field-proven equipment to fit any job. And he'll be happy to prove it—on your job.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE

NOT in the Contract

Wife (to husband after several fast rounds of drinks at a party) "Don't take another cocktail. Your face is already getting blurred."

On the 1st day of school the teacher explained that if anyone had to go to the washroom he should hold up 2 fingers. One puzzled little boy plaintively asked: "How's that going to help?"

"They say brunettes have sweeter dispositions than redheads."

"That's a lot of hooey. My wife's been both and I can't see any difference."

A fellow in Paris, enchanted by such U. S. phrases as "Can I drop you off somewhere?" is puzzled because an American girl he met at a cocktail party isn't speaking to him.

At the party's end he approached her and said brightly, "Can I throw you down someplace?"

Found in the want ads:

"WANTED—A home for a 3-months old puppy, house broken except when very happy."

Two contractors met by chance in a dowtown bar.

"Say," chided one, "I noticed you talking to a strange woman."

"Are there any other kind?" asked the other.

A high school teacher was reviewing the story of the British attack on our national capital in the War of 1812.

"With the approach of the British forces," the history teacher related, "all Congressmen left the city. Of course they came back later."

"Teacher," interrupted one pupil wise in the ways of Washington, "did they collect mileage both ways?"

Him: "Do you know what a marshmallow is?"

She: "Not exactly."

Him: "Why it's a pregnant aspirin."

Said one strawberry to the other: "If we hadn't been caught in the same bed together we wouldn't be in this jam."

A labor leader went to a matrimonial agency. "Is this a union shop?" he inquired first.

"Oh, certainly!"

He picked out a picture of a luscious 24-yr.-old and said, "I'll take her."

"No, you have to take this lady," said the manager, showing a picture of a gray-haired woman of 65.

"Why do I have to take her?" thundered the labor leader.

"She," said the mgr., "has seniority."

To prepare the 3rd grade for a trip to some nearby California missions, Miss Sheldon was describing the outstanding features of Spanish design.

Puzzled little faces reflected unanswered questions, so she asked the youngsters, "Who can tell us what a patio is?"

Tommy, age 8, finally volunteered: "I'm not sure, but I think it's Spanish for bathroom!"

The telephone operator answered the incoming call.

"Hello," a woman's voice said. "Is this the Fidelity Insurance Company?"

The operator said that it was.

"Well, I want to have my husband's fidelity insured.

"Most people can't stand prosperity," says an eminent sociologist. The sad part is, most people don't have to.

The local weatherman was so often wrong in his predictions that he became the laughing stock of the community, and he applied for transfer to another station.

"Why," wrote headquarters, "do you wish to be transferred?"

"Because," the forecaster answered, "the climate doesn't agree with me."

A rookie pitcher, appearing in his first major league game, faced the first batter confidently, went into his windup, and let fly with his first pitch. To his amazement the batter hit it—out of the park. The rookie pitcher glared as the batter trotted around the bases.

"You lucky stiff," he shouted bitterly, "you've spoiled my no-hitter."

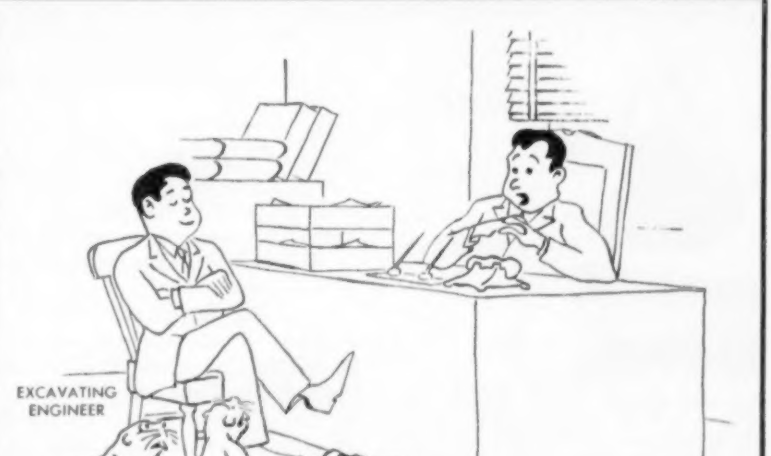
Welder: "I called up that cute girl in the office and asked her if she was doing anything that night. She said she wasn't so I took her out myself, and sure enough, she wasn't."

He: "If I kiss you, will you call for help?"

She: "Will you need help?"

"There, now," said the contractor as he and the pretty young thing he had just married came within sight of Niagara Falls. "Didn't I tell you that if you'd be my wife you could look forward to the biggest cataract you'd ever seen?"

"Cataract?" she screamed, "I thought you said Cadillac!"



"Confidentially, Noggins, how could you submit such a low bid for the construction of the proposed dam?"

New Equipment . . .

Continued from page 55

an automatic steam cycling control which assures that fuel is consumed only when steam is demanded by the load. The quick steaming feature cuts work time. Blowdown and drainage time is reduced from hours to minutes. The steam generator is easily operated; starting, running, blowdown, stopping, and draining instructions and illustrations are mounted on the generator.

The design of the McKiernan-Clayton generator cuts repair costs in both hammers and the generator itself, according to the manufacturer. By delivering quality steam of low moisture, the generator lowers the damaging accumulation of water in the valve and cylinder bores of the hammers. In the generator, less precipitate from the water is left to plug the coils, since high temperature water is carried through the coils without substantially vaporizing into steam until it reaches the accumulator.

Sealer

Manufacturer: Keystone Lubricating Co., 21st, Clearfield and Lippincott Sts., Philadelphia 38, Pa.

Claims: Vike Water Seal is an easy-to-apply soft plastic material used for sealing pipe joints, screw threads, gasket joints, and flanges on lines handling water, air, ammonia, gas, and steam. It is also used on bolts and studs. Manufacturer claims Vike Water Seal will not shrink, crumble, or crack, and contains no corrosive substances.

STANDS UP TO SEVERE USE

and

even

abuse

One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

Joints sealed with the material can be broken easily and quickly when necessary. Vike Water Seal is available in one pound and seven pound cans, 25-lb. pails, 100-lb. kegs, and 400-lbs. drums.

Demineralizer

Manufacturer: Crystal Research Laboratories, Inc., 29 Allyn St., Hartford 3, Conn.

Claims: Deeminac is a new product which produces the chemical equivalent of distilled water, rain-soft and mineral-free, from ordinary tap water. Deeminac is an unbreakable plastic bottle, fitted with a replaceable deionizing filter, which dispenses mineral-free water directly into the battery.

Simply fill the bottle with tap water, insert filter and squeeze. When the filter turns brown, indicating saturation of mineral elements, replace cartridge and Deeminac is again as good as new.

Engines-Electric Sets

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: New higher rpm continuous ratings have been listed for Cat D337 and D326 Engines and Electric Sets in both self- and externally-regulated types. These engines are now available for continuous operation 24 hours a day at 1800 rpm.

Continuous duty is now available at 1800 rpm for externally-regulated D337 Electric Sets at an output of 110 kw and for externally-regulated D326 Electric Sets at an output of 85 kw. Similar operation for self-regulated electric sets is available at an output of 103 kw for D337 Electric Sets and 80 kw for D326 Electric Sets.

Under the ratings an output of 162 BHP from D337 Engines and 118 BHP from D326 Engines is now attainable for continuous operation at 1800 rpm. New outputs for continuous service generally not exceeding an average of 12 hours per day were also released for these engines and electric sets.

Continuous 12 hour service is now available at 1800 rpm for D337 Engines at an output of 182 BHP and an output of 134 BHP for D326 Engines.

For 12 hour duty under the new ratings externally-regulated D337 Electric Sets have an output of 124 kw at 1800 rpm and externally-regulated D326 Electric Sets an output of 95 kw available at 1800 rpm. Under similar operation for self-regulated electric sets D337 Cats have an output of 117 kw and D326 Cats an output of 90 kw.

Backfiller

Manufacturer: Power-Pack Conveyor Co., 13910 Aspinwall Ave., Cleveland 10, O.

Claims: An improved model of the Hopper Conveyor, a machine for backfilling curbs, trenches, and for road widening work, has been introduced by the manufacturer. Attachment to the hauling unit, and release when the truck load of material is placed, has been further simplified by tension ratchets for the connecting cables. Wheel spacing has been widened to 9-ft. 5½-in. and the front edge of the hopper has been lowered to permit use with any size and style of dump body.

A clutch and reduction gear assembly is an integral part of the engine that powers the conveyor, providing easier operation and lower maintenance cost.

An unusual feature of the Hopper Conveyor is the removable conveyor assembly which permits use of the hopper for full width spreading of salt, cinders, topsoil, and gravel. The conveyor can be used separately for handling bulk materials such as brick, block, sand, and other construction supplies.

. . . stripping

A million yards a month COPPER!

P&H
1500
3
P&H
67
75

P&H Electric Shovels

"THE PRIDE OF THE PIT"

Since July 1952 at Anaconda's new mine in Nevada, four 5-yard P&H Model 1500 Electric Shovels have been stripping overburden and copper ore on a 24-hour schedule, 6 days a week. Average production for each machine is 7,000 tons per 8-hour shift, as the Yerington mines ore production reaches 11,000 tons per day. Much of this digging has been done in ground without resorting to blasting.

It's the kind of digging where P&H performance shows up such advanced features as all-welded construction, Magnetorque* hoist, independent propel, powerful worm crowd, stepless control. Remember, too, that P&H electrical equipment is designed and built for shovel service.

Steady, dependable production at low tonnage cost — that's the reason why every third P&H Electric Shovel sold is a repeat order. Get the facts. Ask us to send Bulletin X-139.

*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

P&H LARGE EXCAVATOR DIVISION

HARNISCHFEGER
CORPORATION
MILWAUKEE 46, WISCONSIN

the P&H Line

TRUCK CRANES DIESEL ENGINES POWER SHOVELS PREFABRICATED HOMES ELECTRIC HOISTS SOIL STABILIZERS WELDING EQUIPMENT OVERHEAD CRANES

New Trade Literature

Subject: **A-C Crawler Tractors**
Content: The story of the complete line of Allis - Chalmers Diesel - powered crawler tractors is pictorially told in a new brochure, *FACTS . . . on a New Breed of Tractors.* This 16-page, color brochure follows TIME magazine's format to present an editorial message, operational methods, and specific feature advantages of the four crawlers in the A-C line. Action photographs review the crawlers at work on jobs in practically every possible market. The new book also includes a review of crawler tractor progress the past 100 years. Specifications of each of the four tractors in the A-C line are listed.
Where to get: Allis-Chalmers Manufacturing Co., Tractor Division, Milwaukee 1, Wis.

Subject: **Trailer**
Content: The new Athey Universal Trailer, its construction, features, specifications, and applications are described in a new folder. The method of converting the trailer for specific uses is illustrated in the four-page booklet.
Where to get: Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

Subject: **Concrete Forms**
Content: The first issue of a new quarterly publication, *The Symons Form,* has just been released. The publication highlights current construction in which Symons Forms, safety shores, and column clamps are being used. The publication is amply illustrated.
Where to get: Symons Clamp and Mfg. Co., 4249 Diversey Ave., Chicago 39, Ill.

Subject: **Asphalt Plant**
Content: A new bulletin introduces the standard portable batch type asphalt plant. One of the main features of the new plant is speed of erection. The exclusive standard "Self-Lift" erecting device permits the entire mixing cage to be raised in less than 30 minutes. Entire plant can be made ready for operation in about one day. The folder covers all features of the plant including gradation and weight control and stresses portability combined with a capacity of 40 to 50 tons per hour. Request Bulletin No. 541.
Where to get: Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles 58, Calif.

Subject: **Crane Torque Control**
Content: In 1950 the Orton Crane and Shovel Co. redesigned and began production of Orton Cranes using the GM Allison Torque converter for transmitting power. The application has proved so successful, the manufacturer states, that torque-control has now been applied to the Aero (rubber-tired) cranes and also the Powermatic (crawler) cranes. Catalog 87 describes the torque-control unit in detail, as well as its application to crawler cranes. Catalogs 84 and 85 on the Railroad Crane and Aero-Crane are also available.
Where to get: Orton Crane & Shovel Co., 608 So. Dearborn St., Chicago 5, Ill.

Subject: **Electric Plants**
Content: How Onan Electric Plants are used as emergency standby units, for contractors' portable power needs, as magnet chargers for cranes and trucks, and for primary power for a display coach is told in Volume 10, Number 3 of the Onan publication, *Power Points Digest.* Many interesting installations are described in the two-color, pocket sized, 16-page booklet.
Where to get: D. W. Onan & Sons, Inc., Minneapolis, Minn.

Subject: **Rubber Catalog**
Content: Raybestos - Manhattan, Inc., Manhattan Rubber Division, announces the publication of an entirely new edition of its catalog of rubber products for industry. The catalog covers V-belts, transmission belts, conveyor belts, all types of hose, molded products, and outlines such new R/M products as the revolutionary Poly-V Drive which combines the simplicity of flat belts and the grip of V-belts, eliminating matching and saving space with greater strength. Other new features and products highlighted are R/M Super-Power V-Belts, the "XDC" Conveyor Belt Cover, and the Hydro-Lok Rubber Pipe Flange. The catalog is well illustrated with product and installation photos, and its condensed copy is organized for quickest possible reference. Request Catalog 25-C.
Where to get: Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, N. J.

Subject: **Industrial Engines**
Content: A new six page brochure describes POWER GIANT Industrial Engines,—Model L-4 "Jeep" and Model F-4 "Hurricane." Complete engine details are given both for the L and F head designs including power, torque, and fuel curves at various rpm. Also included are special features, installation diagrams, and other general descriptive material.
Where to get: Industrial Engine Department, Willys Motors, Inc., 1125 N. Cove Blvd., Toledo 1, O.

Subject: **Hand Torches**
Content: Air Reduction is now offering a new 36-page catalog covering its complete line of torches and tips for oxyacetylene cutting and welding. Every Airco standard torch and tip is listed along with the necessary mixers, extensions, adapters, and accessories that are used with the torches. Complete information is presented through carefully planned illustrations, charts, and descriptions. Request Catalog ADC 702B.
Where to get: Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

Subject: **Electric Equipment**
Content: A new bulletin, *Electric Equipment for Heavy Construction Tools,* is a recent G-E release. Designated GEA-6195, the new eight-page publication contains case histories of various electrified construction tool applications for dam construction. According to G.E., the principles of construction tool electrification reported can be applied by all contractors.
Where to get: General Electric Co., Schenectady 5, N. Y.

Subject: **Modern Equipment**
Content: The importance of modern equipment in work programs to develop and increase community services and conveniences, is graphically illustrated in the new 16-page booklet, *Allis-Chalmers Offers New Economy For . . . Villages, Townships, Counties, Cities, States, Federal.* Action photographs take the reader to a wide range of community projects and illustrate

Continued on page 62

FOR THAT EXTRA MARGIN IN SHOVEL PERFORMANCE...

150-B
BUCYRUS ERIE

WARD LEONARD ELECTRIC EXCAVATORS

MORE OUTPUT even under the toughest conditions . . . more loads per shift in any kind of digging . . . extra loads for that EXTRA MARGIN in performance . . . that's what you get from this exclusive combination of shovel front-end features:

1. **TWO-SECTION BOOM** provides maximum strength with minimum weight. The lower section is rigidly connected to the A-frame . . . takes the heavy stresses of the digging cycle in stride because it is part of the main machine.
2. **TUBULAR DIPPER HANDLE** is much lighter than equivalent two-member handle, yet amply strong. Its ability to rotate in the rubber-cushioned saddle block eliminates torsion during the digging stroke, minimizes shock loads.
3. **TWIN DUAL HOIST ROPES** assure a steady, positive digging action with automatic shift of hoist power to that part of the dipper lip where it is needed.
4. **INDEPENDENT ROPE CROWD** is simple, positive and quiet. Shipper shaft pinions and handle racking are eliminated. Crowd machinery is located on main deck rather than on boom — swing inertia is reduced, the operating cycle speeded up.
5. **QUICK CONVERTIBILITY** to dragline of the independent motor type. Hoist and drag functions are powered by separate motors, eliminating operating clutches and brakes.

13L54C

These features — plus many more — make Bucyrus-Eries the finest heavy-duty excavators ever built: yard for yard, dollar for dollar, pound for pound. Write today for complete information on the 4½-yd. 110-B, the 6-yd. 150-B, or the 8-yd. 190-B.

Bucyrus-Erie Company
SOUTH MILWAUKEE
WISCONSIN

New Literature . . .

Continued from page 60

the versatility and year-round use of tractors, motor graders, motor and pull-type scrapers, motor wagons, and power units, with their matched allied attachments. The multi-purpose uses of this equipment provides governmental bodies the means to employ new methods to old jobs that permit quicker completion of the projects and ultimate savings in costs of the work program.

Where to get: Allis-Chalmers Manufacturing Co., Tractor Div., Milwaukee 1, Wis.

Subject: **Arc Welding**

Content: Complete descriptive information along with application and procedure data on all Murex mild steel and low alloy arc welding electrodes are included in a new 30-page catalog. Designed to be helpful in selecting exactly the right electrode for the job in hand, the new Murex catalog also contains formulae for estimating welding costs, heat treating procedures, hardness conversion tables, and other useful reference material for the welding engineer, metallurgist, and welding foreman.

Where to get: Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y.

Subject: **Compressor**

Content: A new bulletin on the Le Roi 600 CTM (compressor tractor mounted) points out that the recently introduced power take-off compressor is available for mounting now on any leading make of crawler tractor. Views of the 600 CTM show the unit mounted on a Caterpillar D8, an International Harvester TD 24, and show it unmounted without the protective tubular steel frame. Specifications and a graphic representation of tool capacities is included too.

Where to get: Le Roi Company, 1706 So. 68th St., Milwaukee 14, Wis.

Subject: **Pre-heater**

Content: A new booklet describes the Kim Hotstart, an electric pre-heater for Diesel and gas engines. The device plugs into any electrical outlet and through a percolator-like action keeps the engine ready for instant starting even when vehicles are stored outside in sub-zero weather. Typical installations are shown in the booklet and specifications listed for various sizes and types of engines.

Where to get: Kim Hotstart Manufacturing Co., W. 917 Broadway, Spokane 1, Wash.

Subject: **Safety**

Content: The skeptical worker who wants to know what he stands to gain from working safely will get a ready answer from the National Safety Council's new employee training booklet, *What's in It For Me?* The 16-page booklet shows that everyone —the employer, the public, and the worker—gains from a good safety program. Stressing the theme that no one is immune to accidents if he is not careful, the booklet drives home the fact that it is not where you work but how you work that makes for safety. *What's in It For Me?* encourages the worker to help himself to happier, accident-free living by aiding the company in its fight against accidents. By reporting unsafe conditions and unsafe acts, the worker can help find a better and safer way of doing a job. Illustrated in four colors, the booklet uses few words, but plenty of cartoons, to put across its message.

Where to get: National Safety Council, 425 No. Michigan Ave., Chicago 11, Ill.

Subject: **Crushing Plant**

Content: A new four-page bulletin describes the new Cedarapids Single Pass Portable Crushing Plant. Bulletin SPP-3 fully explains the principle of operation of the Single Pass Plant and points out the features which make this one of the simplest and easiest crushing plants for producing aggregate for county and township road maintenance, city streets and alleys, small state contracts, jobs in out-of-the-way locations, base or blanket course jobs, and other work where portability and fast set-up are important. The hopper and feeder are mounted on the rear end of the plant, and the dolly on the front end, to permit easy backing up to the face of the gravel bank, without jockeying for position. Copies of the new Single Pass bulletin may be obtained by requesting Bulletin SPP-3.

Where to get: Iowa Manufacturing Co., Cedar Rapids, Ia.

Subject: **Dump Bodies**

Content: A new two-color, four-page catalog is descriptive of Galion Allsteel Model 12N-3 bodies and Model 600, 700, and 710 hydraulic hoists. The folder is illustrated with action photos, line sketches, and cut-away views. Construction details and mechanical features of bodies and hoists are discussed, with special emphasis on exclusive features of Galion products. Full specifications are included.

Where to get: Galion Allsteel Body Co., Galion, O.

Subject: **Highway Officials**

Content: The 1954 directory of *Highway Officials and Engineers* has just been released by the American Road Builders' Association. This edition of the annual directory contains the following information: (1) More than 1,500 names, titles and addresses of administrative engineers and officials in the 48 state highway departments and the District of Columbia. (2) Administrative personnel of the Bureau of Public Roads, including the heads of its division offices. (3) Engineers and administrative personnel of Toll Road Authorities. (4) Officers and directors of ARBA, its seven organized divisions, and its Washington Headquarters staff. (5) A tabulation by states showing highway funds expended during 1953, as well as an estimate of expenditures for highway construction and maintenance during 1954. (6) A tabulation of states having legislative authority to construct toll roads. The directory is available at $1.00 per copy.

Where to get: American Road Builders' Association, World Center Bldg., Washington 6, D.C.

Subject: **Blast Hole Drill**

Content: Ingersoll-Rand has announced a new bulletin describing the new QM-2 Quarrymaster, which the manufacturer claims is the only machine of its kind developed as a dual purpose blast hole drill for either rotary or percussion drilling. The bulletin tells the story of the QM-2 as a percussion drill pointing-up its features and its uses. Two additional pages do the same thing for the unit as a rotary drill. The center spread, by means of a large illustration and easily read captions, depicts the individual features that makeup the Quarrymaster. Other pages of the bulletins show "in-use" pictures, give dimensions and specifications, and list accessories that are available. Request Form 4153.

Where to get: Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Copper Mines . . .

Continued from page 23

appears to have received the name Mineral City in 1868 or 1869.

The first shaft in the so-called Veteran area was what was known as the Alpha No. 1 shaft started about 1905 and abandoned as an operating shaft during the first World War, and was used as a ventilating shaft until the abandonment of the larger and better equipped Alpha No. 2 shaft, which was started in 1907 and abandoned in 1950. The areas served by these two shafts will now be utilized as dump areas for the Veteran operations.

The great bulk of sedimentary rocks in the Ely Quadrangle are limestones, quartzites, and shales. Their age ranges from Ordovician to Carboniferous. Many are more than 9,000 feet thick. Eight formations of sedimentary rocks have been classified — all greatly disturbed by folding and faulting, so that their areal distribution is very irregular. The six uppermost of these eight formations have been invaded by igneous masses of monzonite porphyry.

Igneous rocks in the district include an older set of monzonite porphyry intrusions, and a younger set of tuffs, obsidians, and rhyolites. The monzonitic rocks have particular interest, because genesis of metallic ores in the district is closely connected with their geological history.

Certain intrusive masses north of Lane City show the form of sills, which have produced very little alteration of the limestone in contact with them. But along an eastward-trending series of cross-breaking stocks, which extends through the central part of the district, the enclosing limestones and shales have been noticeably metamorphosed, and the intrusive rock itself has been greatly altered. The ore deposits of the district are associated with these stocks of monzonite porphyry. The intrusion of monzonite was followed by a long period of erosion, during which the region was reduced to a condition of moderate relief. This period of erosion occurred about the beginning of volcanic activity, probably in late Tertiary times.

Extensive beds of pyroclastic materials were deposited. Later, there were outbursts of rhyolitic lava. Volcanism was probably accompanied by, and was certainly followed by faulting. Erosion was in progress throughout the volcanic period. Since its close, the lava beds have been entirely removed from ex-

Continued on page 66

③ NEW FEATURES *improve trailer performance*

① **Lengthwise Decking**
Tough oak planking runs parallel with length of trailer for *extra strength and durability* in end loading . . . is specially recessed for *minimum* loading height.

. . . and now LACROSSE gives you all three!

Here are *three more* reasons why the best trailer buy in 20 to 40-ton capacity low beds is the new LaCrosse DF6T. This popular tandem axle carrier now gives you extra durable lengthwise decking . . . lighter weight spoke wheels . . . plus replaceable brake spiders. And that's not all! LaCrosse continues to give you *up to 2000 lbs. more PAYLOAD capacity per trailer* . . . plus bigger brakes with longer-lasting linings . . . still at the *lowest price in the industry!* Better get full details right now.

LC-28

② **Replaceable Brake Spiders**
Exclusive bolt-on arrangement (right) permits *quick, low-cost spider replacement,* without having to purchase or remove expensive axle assembly.

OLD DESIGN
NEW DESIGN

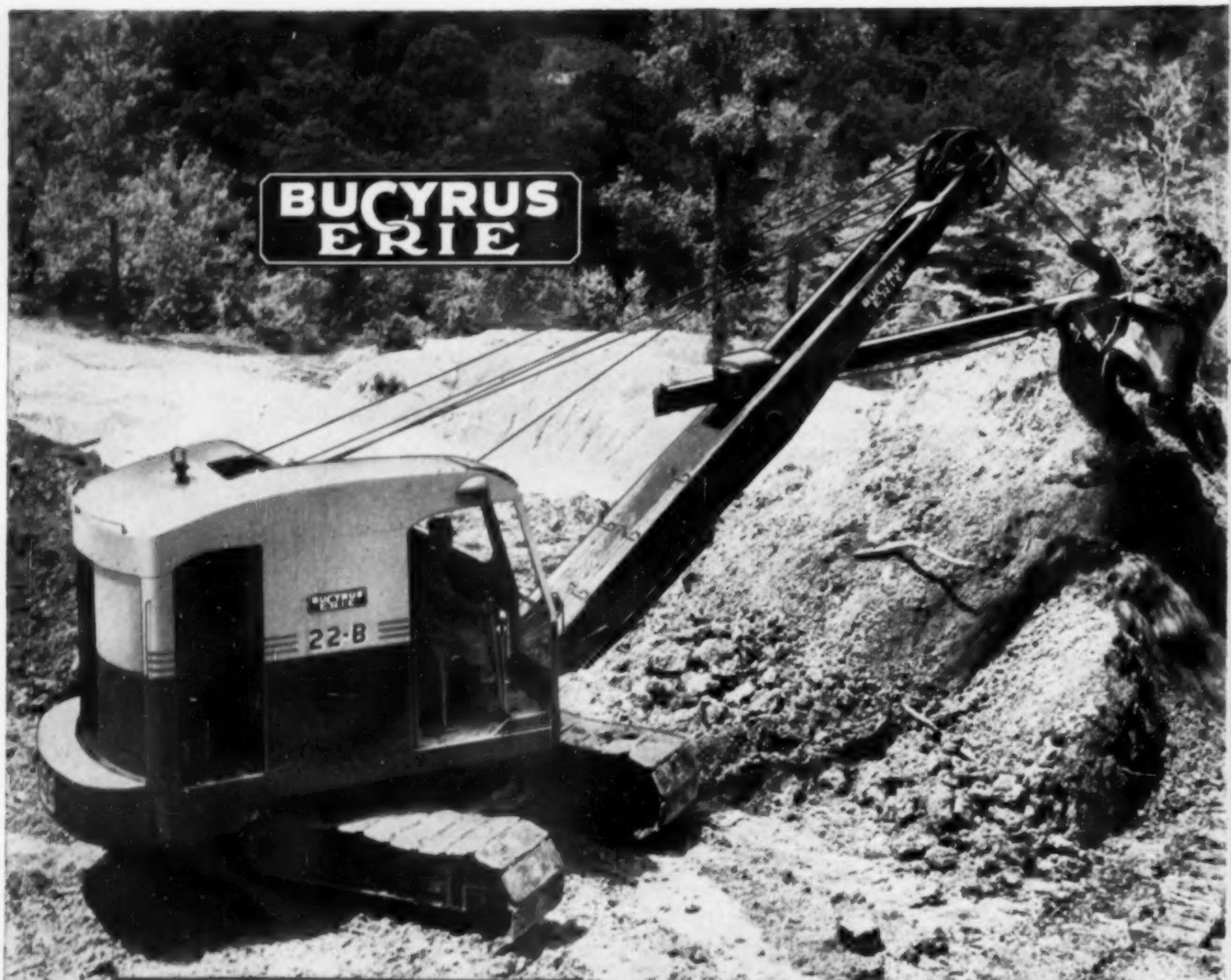
③ **Cast Steel Spoke Wheels**
Improved La Crosse design, with 6 individual rim lugs, *saves 30 lbs.* of useless dead-weight per wheel . . . *simplifies alignment* of wheel and rim.

Check Today!

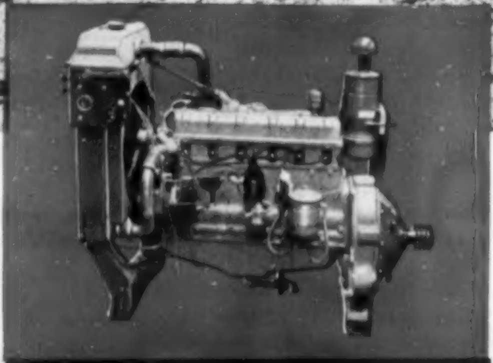
LaCROSSE TRAILER CORPORATION, LaCrosse, Wis.

☐ Rush complete information on LaCrosse trailers:
☐ Specifications ☐ Prices ☐ Delivery
☐ Send name of nearest LaCrosse Distributor.
☐ We may buy a ______ton trailer about________________ (date)
Name ______________________ Title ______________
Employed by ________________________________
Address ___________________________________
City ______________________ State ______________

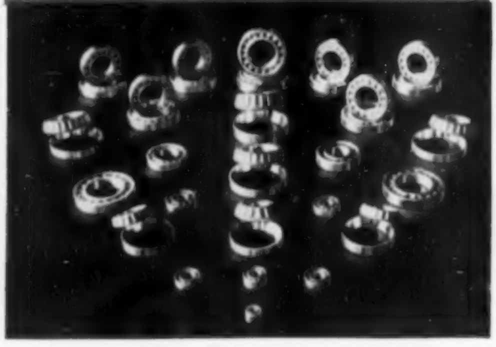
LaCROSSE
America's Favorite LOW-BED TRAILER



Heaped loads like this are the rule with Bucyrus-Erie excavators because full power is put to work at the dipper — none is wasted swinging useless deadweight.



Power Is Right To Begin With because power unit has operating characteristics designed to meet the needs of excavating and lifting service, and is matched to the rated capacity of the machine in which it is used. Special "tailoring" of the engine provides better fuel and air mixture for increased efficiency . . . less pulldown under sudden loads . . . more lugging power at slower speeds . . . ability to regain speed quickly after slow-downs.



Power Rides To Work Efficiently with minimum loss from friction and inertia. Most power-transmitting parts used in the digging cycle ride on anti-friction bearings. Fewer actual parts are used — power flow is free and direct.

HOW BUCYRUS-ERIE INDIVIDUAL DESIGN HELPS

put more of your excavator power to work

When the maximum of your excavator's rated engine horsepower goes to work you get many advantages — most effective digging, fast work cycles, real fuel economy, and high overall output.

With Bucyrus-Erie's Individual Design of each model in the line you are sure that for every machine: (1) the power plant is carefully selected to handle the rated capacity; (2) power flows freely through efficient machinery designed for that model alone; (3) the machine is engineered with plenty of strength but without deadweight that accompanies under-powering one machine to make a "new" model.

Individual Design does more than get the most from power — it saves maintenance, lengthens excavator life, gives you more excavator for your money. Your Bucyrus-Erie distributor will give you the complete story on this outstanding line of ⅜- to 4-cu. yd. gasoline, diesel, and single motor electric excavators.

35E54C

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

No Power Is Wasted Swinging Deadweight because Individual Design tailors each part for its job on a particular model without adding useless weight. Strength is added and weight further reduced on main and truck frames with box-section design and internal reinforcing ribs. Dragline booms are of all-welded, lattice-type construction with no excess weight but strong enough to take compression and swing stresses. Shovel front ends combine light weight for faster swing with plenty of strength for tough digging.

See Your Bucyrus-Erie Distributor

SHOVELS • DRAGSHOVELS • DRAGLINES • CLAMSHELLS • CRANES •

Copper Mines . . .

Continued from page 63

The I-beam piling was driven down 63 tensive areas, and the existing topography has been produced.

Jasperoid, the toughest formation Isbell's crews have fought, consists essentially of quartz, deposited in matasomatic replacement of limestone. In this district, the jasperoids in their unoxidized condition usually carry considerable pyrite, and in places they contain chalcopyrite as well. The silica takes the form of bull quartz. However, chalcedony is common, either in fractures or in interspace fills, which are thought to be due to incomplete occupation of the original volume of the limestone or the first-formed replacing materials. On the other hand, jasperoid in some occurrences is composed largely of chalcedony.

The jasperoids present prominent rusty outcrops, placed throughout the central zone of metamorphism. The principal occurrences are contiguous to masses of porphyry, but in certain areas this sort of limestone replacement is found well away from exposures of the igneous rock, possibly along channels in the limestone. Outlying jasperoid masses are commonly more or less reef-like in form, and some of them are walled by essentially unaltered limestone. In the eastern part of the district there is considerably less jasperoid than in the central and western part. Thus there is more jasperoid to drill at Veteran Pit than at Kimbley.

Metallic copper occurs as a rare secondary product of mineralization in the mines of the Ely district. Some of it has been found in association with chalcocite and cuprite, in such places as the old Alpha Mine. Here, also, minute crystal aggregates of copper occur in company with pyrite in specimens of clay gouge containing quartz, sericite, and kaolin. Native copper occurs sporadically in small isolated areas in the Veteran Mine, and has been found in churn drill holes situated on the west side of the White River Divide. In Copper Flat, finely divided copper was noted, locally disseminated in the partly decomposed rhyolite of the dike which cuts across the ore mass that was exposed in 1910. No explanation is offered of the chemistry process by which metallic copper was deposited in this disseminated form within the rhyolite, but responsible geologists like Spencer and Lawson say it must have been precipitated from sulfate solutions, resulting from the oxidation of copper sulphide—whether chalcocite or chalcopyrite. Native copper is, however, mostly a mineralogical curiosity.

The mines of the Ely district promise to continue their production of copper for many years to come, contributing in sizable measure to America's industrial greatness.

Personnel

In the decentralized Nevada mining organization of the two copper mining companies, operations are supervised locally. For Kennecott Copper Corp., J. C. Kinnear, Jr., is head of the Nevada Mines Division. Consolidated Coppermines Corp. work is under the supervision of Art O'Connor, vice president and general manager.

MAX GWIN
EXCAVATING ENGINEER

"We have an 890,000 cubic yard fill, a 520,000 yard cut and 25,000 yards of concrete to pour. You'll have to wait a few minutes."

Ohio Turnpike . . .

Continued from page 33

feet with the aid of a Bucyrus-Erie 38-B crane powered by a Cat Diesel. To provide the steam for the Vulcan hammer, a Le Roi engine powered Cleaver-Brooks steam boiler was on hand.

To conduct the test for settle, a bar was welded on the side of the pile with a spike on the underside pointing to another spike in the ground. A Hercules powered Lincoln welder was used for this task. Then 40 tons of pressure supplied by four hydraulic jacks was brought to bear on the test pile in the first hour, one-fifth (eight tons) of that amount added in the second hour, and so on until a total of 80 tons was reached. The distance between the points of the spikes was then measured. Twenty-four thousands of an inch, measured by a micrometer, is test failure. But because pilings are sunk through at least 20 feet of undisturbed ground, the pile seldom settles below thirty-two thousands of an inch.

Across the graded road, a truck-mounted Michigan clamshell was busy bringing up the approach grade another four feet so that piling operations could get under way. Barco tampers were being used to compact the fill.

R. H. Pierce is in charge of the contract section and Ralph DeWeese is project engineer.

Notes from the Manufacturers

John A. Roebling's Sons Corp., Trenton, N. J., has named Edwin F. Whitehill as Cleveland district manager for its Wire and Cold Rolled Products Division.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed George L. Read as its Canadian sales manager. Read takes over sales of all Bucyrus-Erie products except water and oil well drills in all Provinces of Canada east of and including Saskatchewan. His new office and residence is located at 1 Swindon Road, Toronto 18, Ontario, Canada. Read graduated from Clarkson College of Technology, Potsdam, N. Y., in 1935. He spent one year with an advertising agency in Pittsburg, Pa., before joining the International Nickel Co. in 1936 as a mining engineer. In 1939, Read became a sales engineer for the Canadian Ingersoll-Rand Co., Ltd., until his entry into the Canadian Army in 1942. During World War II, he was with the Royal Canadian Engineers in charge of purchase, supply, and maintenance of all heavy earthmoving equipment being supplied the Canadian Army at home and abroad. In November of 1945, Read joined Bucyrus-Erie's Export Sales Department, and since then, has traveled extensively over the world in his capacity as a sales engineer.

Blaw-Knox Co., Pittsburgh, Pa., has announced the appointment of John Pendergast as domestic sales manager of its Foote Construction Equipment Division. Pendergast has had an extensive background in construction equipment and for years was sales promotion manager of the Road Machinery Division of the Heil Co., Milwaukee, Wis. More recently he was associated with the Contractors Machinery Co., Batavia, N. Y. Located at Nunda, N. Y., the Foote plant of Blaw-Knox specializes in the manufacture of road paving machinery and

Continued on page 68

FULL LOAD...FULL PROFIT

On all digging jobs full bucket loads mean full profits for you. In Omaha Dragline Buckets surplus weight has been eliminated and a bigger pay-load is built-in. A higher arch gives more clearance for digging and dumping, makes room for a bigger load. Available in four types. Send for complete catalog giving description and specifications.

OMAHA
DRAGLINE BUCKETS

DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

STURDILITE

Available in 6-8, 12-16, 24-28, and 110-120 voltages.

Rubber Mounted Base
Standard Model

Heavy-Duty
FLOOD LAMPS

For Better Light • Longer Service • Lower Cost

Especially Designed for Efficient Service on

Shovels • Excavators • Drag-Lines • Roadbuilding Equipment
Locomotive Cranes • Tractors . . .

Metal Spinning Division

PHOENIX PRODUCTS CO.

4723 N. 27TH ST. • MILWAUKEE 16, WIS.

Write for Illustrated Bulletin.

Notes . . .

Continued from page 67

has just recently introduced a super asphalt paving-finisher capable of laying up to 80 feet of single lane asphalt surface per minute.

Atlas Powder Co., Wilmington, Del., has appointed George T. Errickson as special representative, explosives department, covering all pipe line construction work in the United States. Errickson was formerly sales agent for the Knoxville District, Lexington, Ky. Errickson will work with W. C. Davis, assistant director of sales, and W. T. Mahood, manager of the contractor's division. Davis and Mahood are in the Wilmington general office.

American Hoist & Derrick Co., St. Paul, Minn., has appointed Ray J. Dervey as general sales manager. Dervey, a native of St. Paul and a mining engineer graduate of the University of Minnesota, class of 1938, started his industrial career as a production engineer for United States Steel Co. Entering the U. S. Army in 1940, he saw five years of service. Joining American Hoist in 1945, Dervey worked in the industrial equipment division at the St. Paul sales office. He was promoted to district manager in 1946, at which time he took charge of the Pittsburgh office and territory. Dervey fills the post formerly held by John Carroll, now president of the firm.

Baldwin - Lima - Hamilton Corp., Construction Equipment Division, Lima, O., has appointed John G. Watson, 2219 Chastleton Drive, Michigan City, Ind., as district manager. His territory includes the Calumet district in Indiana, Illinois, Missouri, Kansas, and lower Michigan. A native of Hartford, Conn., Watson joined the Lima organization in 1942 as a shovel, crane, and dragline salesman in New York City. After serving as a lieutenant in World War II, he became sales manager, Trailer Divisions, Pressed Steel Car Co., Inc. of Chicago, Ill. He has been sales engineer for Lima since July 1953.

"Some blaster you are! You don't even recognize dynamite when you see it."

Blaw-Knox Co., Pittsburgh, Pa., has announced an improved Parts and Service Department for expediting shipment of replacement parts to customers of its Construction Equipment Division. The new department, now in full operation, is located at Springdale, Pa., a few miles from major Blaw-Knox plants in the Pittsburgh district, and is under the management of S. M. Pare, veteran of many years' experience in construction equipment. More than 10,000 different parts are stored in the 16,000 square feet of warehouse space, and in adjoining yards. Present inventory approximates a half-million dollars, and is composed of individual parts and sub-assemblies for the company's complete line of construction equipment, principally road building machinery, clamshell buckets, and steel forms.

Bucyrus-Erie Co., South Milwaukee, Wis., recently announced that Euclid Sales and Service, Inc., St. Louis, Mo., now offers sales and service on Bucyrus-Erie excavators and cranes in eastern Missouri and west central Illinois. The firm will handle the full line of ⅜- to 4-yd. convertible excavators and cranes, equipped with gasoline, Diesel, or single-motor electric power units; 15-ton and 25-ton capacity Transit Cranes; the truck-mounted all-hydraulic Hydrocrane and Hydrohoe; and Red Arch dragline buckets. The territory includes the following: *Missouri*—east of and including the counties of Scotland, Knox, Shelby, Randolph, Boone, Callaway, Osage, Maries, Phelps, Texas, and Howell. *Illinois*—bounded on the north and including the counties of Adams, Brown, Morgan, Macoupin, Montgomery, Christian, Shelby, Moultrie, Coles, and Clark; bounded on the south and including the counties of Jackson, Franklin, Jefferson, Marion, Clay, Richland, and Lawrence. Sangamon County in Illinois, however, remains open territory. In serving 85 counties in the two states, the new distributor maintains headquarters at 5231 Manchester Ave., St. Louis 10, Mo. Along with sales and service adequate parts stock is available.

Clark Equipment Co., Benton Harbor, Mich., has announced the appointments of two southern firms to handle its Michigan line of excavator cranes and tractor shovels. Dempster Brothers, Inc., 312 W. Springdale Ave., Knoxville, Tenn., will handle the Michigan products in those counties in Tennessee east of the Tennessee River, and in the Georgia counties of Dade, Walker, Catoosa, and Whitfield. Standard Equipment & Supply Co., Sixth and Palm Sts., North Little Rock, Ark., will serve the entire state of Arkansas with the exception of the counties of Greene, Craighead, Poinsett, Cross, St. Francis, Lee, Phillips, Mississippi, and Crittenden.

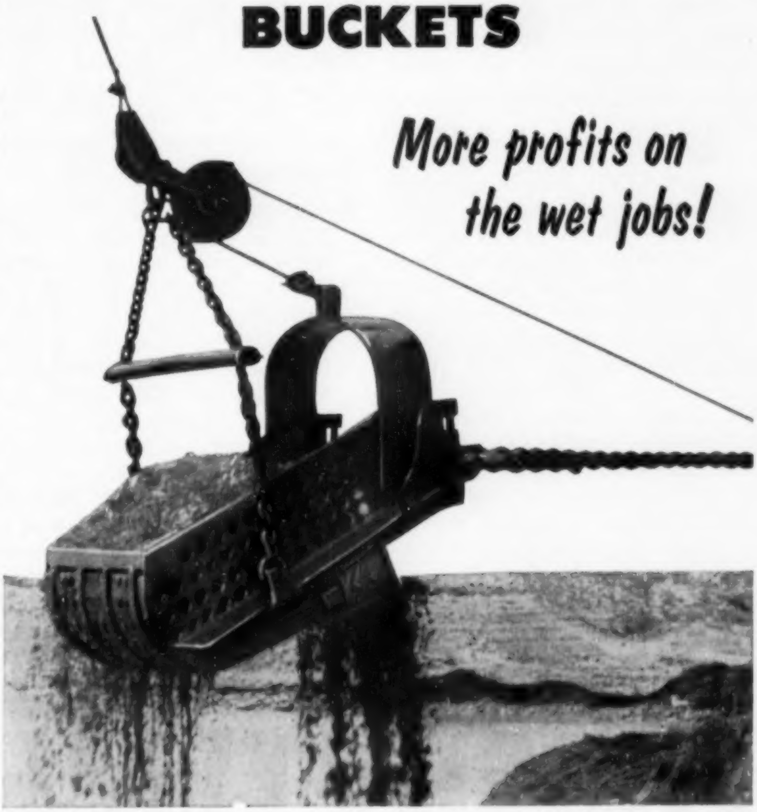
D. W. Onan & Sons, Inc., Minneapolis, Minn., has appointed Charles J. Helmholtz, Boston (West Medford), Mass., as direct factory sales engineer covering the New England states. Helmholtz, formerly manager of dealer sales division, Boston Branch, Fairbanks-Morse & Co., has been active in sales work throughout his entire career. He had been associated with Fairbanks-Morse & Co. for more than 34 years. Headquarters for Helmholtz will be in West Medford, Mass., but he will spend the majority of his time working directly with Onan distributors and dealers in the field.

Gar Wood Industries, Wayne, Mich., has announced a broad sales reorganization program centralizing the sales and marketing functions of all divisions of the corporation and of the National Lift Co., a subsidiary. E. B. Hill, vice-president, is now appointed director of sales, advertising, and export for all corporation products. Division sales managers, who formerly headquartered at plants, will now report directly to Hill. Gar Wood's reorganization of its sales activities under Hill's direction, follows the completion of a new product development and improvement program. Hill started with Gar Wood in 1926 and has had broad experience in all phases of the company's business. He became a vice-president of Gar Wood Industries in 1949.

Gorman-Rupp Co., Mansfield, O., has appointed Ted C. Bauck as a district representative, covering a five state midwestern area. In 1947, Bauck received a degree in mechanical engineering from Tri-State College in

Continued on page 70

WELLMAN-WILLIAMS
PERFORATED DRAGLINE
BUCKETS



THE Wellman-Williams Perforated Dragline Buckets have welded stiffeners the full length of the bucket for maximum strength and rigidity. Alloy steel construction gives maximum strength with minimum dead weight. Teeth are made of manganese steel and are reversible.

Hitch connections can be easily adjusted to any desired digging depth. Gives the operator a wide digging range for faster work.

Solid plate type dragline buckets also available.

It's a WELLMAN — built to dig and last while digging.

THE WELLMAN ENGINEERING CO.
CLEVELAND 4, OHIO

Mail coupon for free bulletin

The Wellman Engineering Company
7038 Central Avenue, Cleveland 4, Ohio

Please send me a free copy of bulletin on:
☐ Clamshell Buckets
☐ Dragline Buckets
☐ Stone Grabs
☐ Log Grabs

Your Name____________
Address____________
City____________ State______
Position____________ Company____________

Notes . . .

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Indiana. Since that time he has been associated with Goulds Pump, Inc., and Marlow Pumps, Division of Bell & Gossett. He was a sales engineer for both concerns. Bauck has had three years experience in the Gorman-Rupp organization as a sales engineer and manager of industrial sales.

Gradall Division of The Warner & Swasey Co., Cleveland, O., has appointed the Construction Equipment Co., Birmingham, Ala., as Gradall distributor for the state of Alabama and Northwestern Florida. Construction Equipment Co., distributors of construction and industrial equipment is headed by R. F. McCullough, president. It maintains at 2921 Second Ave., South, in Birmingham a headquarters which consists of an administrative office, parts department, service department, and sales department. The company also has a Mobile, Ala., branch headed by Leo Reed, manager. Contractors in the Alabama and Northwestern Florida area can now arrange for field demonstrations of the multi-purpose Gradall by contacting Construction Equipment Co.

Heil Co., Milwaukee, Wis., has appointed Roadway Mounting and Equipment Co., 21177 Mound Rd., Van Dyke, Mich., as a distributor of its truck bodies and hoists. Its territory for Heil equipment includes the counties of Monroe, Washtenaw, Wayne, Oakland, Macomb, and St. Clair. Roadway Mounting and Equipment Co. was founded in 1945 as a truck equipment sales and service corporation.

Hercules Powder Co., Wilmington, Del., has named J. Henry Schindler, Jr., manager of export sales of explosives with headquarters in the New York office of the company. He succeeds J. R. St. Clair who has retired from the post after 35 years' service with Hercules. Well known as an explosives engineer, Schindler was recently called to Panama to make recommendations on the use of explosives to eliminate the crack that occurred at the Gaillard Cut of the Panama Canal. In Venezuela, he was consultant on technical problems in the use of explosives in the building of the famed Auto Pista joining Caracas to LaGuaira. In the past few years, Schindler has done technical service work on the use of industrial explosives in Hawaii, the Philippines, Mexico, Cuba, Puerto Rico, and Nicaragua. Schindler, a mining engineering graduate of the University of Pittsburgh, also did post graduate work there. Following six years experience in the coal industry, he joined Hercules Powder Co. in 1939, as an explosives serviceman at the Pittsburgh, Pa., office of the company. Since 1946, with headquarters at Hercules' home office in Wilmington, he has served as a consultant on the use of explosives by Hercules customers in the mining, quarrying, and construction industries. Schindler is a member of American Institute of Mining and Metallurgical Engineers, Engineers Club of New York, National Society of Professional Engineers, and Pennsylvania Society of Professional Engineers.

Hyster Co., Portland, Ore., has appointed Charles P. Gruet new northeast district representative for the Hyster line of tools and attachments for Caterpillar-built tractors. Gruet has been in the heavy equipment and construction field for 24 years. He was recently manager and director of the 14 offices of Gailey and Roberts, Ltd., in Africa and previously sales engineer and district representative for Caterpillar Tractor Co. dealerships in eastern and central Africa.

Iowa Manufacturing Co., Cedar Rapids, Ia., has announced that at a recent meeting of its Board of Directors, the following officers were elected, with promotions going to several key men who have been with the company for many years. Howard Hall, president; Kenneth Lindsay, executive vice president, director of sales and advertising; James F. Plumb, vice president and treasurer; B. T. Perrine, secretary; A. C. Gossard, vice president, domestic sales manager; C. O. Norberg, vice president, parts and service; H. C. Pollitz, vice president, engineering; and J. W. Riley, vice president, production. The balance of the corporate structure of the company remains the same.

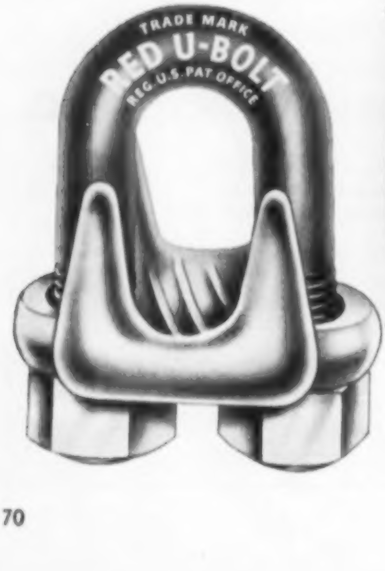
John A. Roebling's Sons Corp., Trenton, N. J., has appointed Robert J. Cole, prominently identified with

Continued on page 72

GENUINE
CROSBY CLIPS
THE NAME THAT
GUARANTEES QUALITY

✓ Extra Margin of Safety Built In Every Feature
✓ Drop-Forged Steel
✓ Hot-Dip Galvanized
✓ "Vise Tight" Grip

Crosby Products
Division
American Hoist
& Derrick Co.
St. Paul, Minnesota



TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

FOR SALE

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 2½ YDS. & UP

Lima "1201" dragline, serial #4116; 80′ boom, 3 cu. yd. Page RH dragline bucket; powered by Cummins L-600 diesel engine, and equipped with Kohler Light Plant.

Marion model 40-A dragline, serial #8256; 89′ boom, 3 cu. yd. Page bucket. Caterpillar model D-17000 diesel engine and Kohler Light Plant.

Manitowoc model "3000-A" high lift shovel, serial #3197; 35′ boom, 27′ dipper sticks, 1¾ cu. yd. dipper; powered by Cummins model NHIS-600 diesel engine and equipped with Kohler Light Plant.

Lima model "802" high lift shovel, serial #3145; 32′ boom, 27′ dipper sticks, 1¾ cu. yd. dipper; powered by Caterpillar model D-17000 diesel engine. The above machines are in good condition and reasonably priced. Contact Allison Engineering Co., Foxburg, Pennsylvania.

P & H model 1400 electric shovel, equipped with 3½ cubic yard dipper, 48′ boom, 34′ dipper sticks, for 3 phase, 60 cycle, 4000 volt current; available immediately; excellent condition, reasonable price; located in Western Pennsylvania. Box 3576

Used equipment for sale: Two 9W Monighans 12 cu. yd. 200-W Monighan 8 cu. yd. 5-W Monighan 6 cu. yd. Two 620-W Page walkers 6 cu. yd. 44-B Bucyrus-Erie comb. shovel and dragline. Catalogue of used equipment furnished on request. J. A. Terteling & Sons, Inc., Box 1428, Boise, Idaho.

Bucyrus-Erie model 120-B electric shovel, excellent mechanical condition, new in 1949, located in Minnesota, priced to sell. Box 3566

Page 625-S diesel walking dragline with 150 foot boom and 10 yard bucket; new in 1948; good operating condition; location Middle West. Box 3555

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Lima 1201 combination shovel and dragline. Cummins diesel engine, 80′ dragline boom. Location middle west; priced to sell. Box 3548

For sale or will rent at A.G.C. rental rates Bucyrus-Erie 54-B dragline, long and wide caterpillars, maximum 80′ boom, Buda 1879 diesel engine, serial #50753; machine in excellent condition. Carveth Construction Co., Lincoln, Nebraska.

Michigan model T-K-6 heavy-duty truck crane in top condition; many extras including 35′ boom, ⅜ yd. heavy-duty clamshell bucket, Rudomatic tagline reel, 1000 lb. extra counterweight, driver's cab, 1100x20 tires and backhoe attachment new; price with all attachments $6925 subject to prior sale. F.O.B. Alexandria, Virginia. Box 3581

Osgood ½ yd. crane on crawlers, gas engine. Lorain model TL-20 shovel on crawlers, Cat diesel engine. Bucyrus-Erie model 10-B shovel. Bucyrus-Erie model 10-B crane.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Philadelphia, Pa.
5101 Paxton Street, Harrisburg, Pa.
Water Street, New Philadelphia, Pa.

Lorain model 80 1¼ yd. combination shovel, clamshell dragline machine, 50′ boom, w/Cat D13000 engine; 1950 machine; excellent condition; inquire today. H. O. Penn Machinery Co., Inc., 140th Street & East River, New York 54, New York, Phone: CYpress 2-4800.

10-B Bucyrus-Erie shovel	$ 6,500
15-B Bucyrus-Erie comb. shovel & clam.	8,500
80-D Northwest comb. shovel, drag. & crane	28,000
54-B Bucyrus-Erie comb. shovel, drag. & clam	37,500
54-B Bucyrus-Erie shovel	30,000

Write for our current equipment bulletin!

Guy F. Atkinson Company
10 West Orange Ave., Phone: Plaza 6-0300
So. San Francisco, California

Koehring #301 ¾ cu. yd. combination dragline, clamshell, gas engine, 50′ boom, in working condition; serial no. 1539, location Omaha, Nebraska, price $3,750. Fuchs-Clayton Machinery Co., 901 S. 40th St., Omaha, Nebraska.

Shovel attachment for 205-1A Koehring ½ cu. yd. capacity, like new, serial no. C4908-4131; location Omaha, Nebraska, price: $1,100. Fuchs-Clayton Machinery Co., 901 S. 40th St., Omaha, Nebraska.

Lorain model 95 dragline with 75′ boom 2¼ yd. bucket, D-17000 Caterpillar diesel engine serial number 9309, fully enclosed steel cab recently installed.

Ransome 56S concrete mixer, complete with water batcher and batch meter; no motor.

Six concrete buckets, Blaw-Knox, 2 cu. yd. capacity, roll bottom. J. Ray McDermott & Co., Inc., Harvey, La.

Model H-2 Bucyrus-Erie Hydrocrane with clamshell bucket and cab, mtd. on F-6 1948 Ford truck, price: $3250 FOB Bflo., N.Y. Dow & Co., Inc., 1820 Elmwood Ave., Buffalo, N.Y.

MISCELLANEOUS EQUIPMENT

International Harvester model UD-14A diesel engine 4¾″x6½″, 76 H.P. @ 1400 R.P.M. complete with accessories; used 400 hours in light test work on model 22-B shovel; special reduced price: $1500 F.O.B. South Milwaukee, Wis. Box 3584

Complete dragline equipment including 90 foot boom less bucket removed from Bucyrus-Erie 100-B, serial #23067, price: $5000. Morrison-Knudsen Company, Boise, Idaho.

P&H crane, model 6558, w/counterweights, 70′ boom, 25′ jib, boom stops, high gantry; fairleads and tagline; available now.

D-6 Cat. #8030, w/hyster; model 24; cable control unit, serial 51356, angle dozer, serial A18259SK.G.A. completely overhauled; available now.

TD-6 International crawler tractor 30″ wide tread w/Bucyrus-Erie 6WG 2 yd. bull grader w/front pump, serial no. 29853 w/one set rubber pads for tracks; available December 15, 1954 approximately.

TD-9 International diesel crawler tractor w/Bucyrus-Erie, model 9DSNS dozer shovel w/1 cu. yd. 75″ wide bucket w/teeth; available December 15, 1954 approximately.

Koehring model 605 diesel crawler crane, serial C-5725 w/80′ boom, 10′ jib tagline and accessories; available December 15, 1954 approximately.

Compressor Worthington 500 CFM, serial 104473; available December 15, 1954 approximately. All above equipment priced right and in good shape, to be sold as is, where is, by Donovan-Kehne-Foley, P. O. Box 687, Paducah, Kentucky, Phone: 56311, Ext. 8510.

Five slightly used, Goodyear 14 ply Hi Miler 12x20 tires; special reduced price: $125 each f.o.b. Erie, Pennsylvania. Box 3579

Model 66 Wayne ½ cu. yd. shovel, Waukesha engine, 2-speed transmission; special price, location New York state. Box 3585

Caterpillar D-7 tractor w/LeTourneau blade and double drum PCU. Caterpillar D-8 tractor w/LaPlant Choate hydraulic blade. Caterpillar D-7 tractor w/LeTourneau tiltdozer. International TD-18 tractor w/hydraulic bulldozer blade. LeTourneau Super "C" Tournadozer w/torque converter and down pressure blade.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Philadelphia, Pa.
5101 Paxton Street, Harrisburg, Pa.
Water Street, New Philadelphia, Pa.

Equipment for Bucyrus-Erie 15-B: New dragshovel equipment (Unit 20A), price F.O.B. Milwaukee, Wis. $1,521.50.

Equipment for Bucyrus-Erie 22-B: New dragshovel equipment (Unit 20), price F.O.B. Milwaukee, Wis. $2,060.

Equipment for Bucyrus-Erie 22-B: Drum lagging grooved for ⅝″ rope, F.O.B. Milwaukee, Wis. $90.30. Phone, wire or write:

Nagle-Hart Tractor & Equipment Co., 212 South Thornton Ave., Madison, Wisconsin. Phone: 5-9447.

WANTED TO BUY

Used backhoe dragshovel attachment for Bucyrus-Erie 10-B machine. Call or write: J. P. Waite, Inc., 3304 W. Pierce St., Milwaukee, Wisconsin, EV 4-1900.

POSITION WANTED

Operator: Erie, Marion, Manitowoc, or Lorain, can service any make; married, reliable, sober, 30 years experience, will go anywhere. J. W. Hildebrand, 2298 Pennsylvania Ave., Charleston, West Va.

If you are Buying or Selling Used Equipment this is the place to let the Excavating Industry know about it.

Notes . . .

Continued from page 70

construction of many of the country's largest suspension bridges built during the past 25 years, as Pacific Coast manager of its Construction Materials Division. John A. Roebling's Sons is a wholly-owned subsidiary of the Colorado Fuel and Iron Corp. Cole, more recently serving as president of the Pointer-Willamette Co. of Edmonds, Wash., will now direct the sale of Roebling wire and stranded steel products for prestressed concrete use. Cole's service with the Roebling organization dates back to 1923. He was the Corporation's general superintendent of cable installation for the Golden Gate Bridge and manager of erection for the main cables of the new Tacoma Narrows Bridge. He also worked on the Roebling-built George Washington Bridge. He was named superintendent of the firm's wire rope shops at Trenton in 1940, and manufacturing manager of the Wire Rope Division in 1945. In August 1948 he was assigned to the Tacoma Bridge project. Upon its completion, he assumed the presidency of Pointer-Willamette, on leave from Roebling.

Koehring Co., Milwaukee, Wis., has appointed a new distributor for the West Texas area. As of the second of July, W. L. Johnson Machinery Co. of Midland became a distributor of Koehring and Kwik-Mix (Koehring subsidiary) products. It will sell and service Koehring and Kwik-Mix products in the following areas: all counties west of and including Lipscomb, Hemphill, Wheeler, Collingsworth, Childress, Cottle, King, Stonewall, Fisher, Nolan, Runnells, and Concho. Also, it will serve counties north of and including Loving, Ward, Crane, Crockett, Irion, Tom Green, and Concho.

Leschen Wire Rope Division of the H. K. Porter Co., Inc., St. Louis, Mo., has announced the appointment of L. Jack Clarke as general sales manager. Clarke has served the Leschen organization as field representative in the New Orleans area and as manager of the New York sales district. He will make his headquarters in St. Louis. Previously he was a heavy earth moving contractor. During the war he served in the armed forces as a lieutenant commander in the navy.

Marion Power Shovel Co., Marion, O., has acquired controlling interest in The Osgood Company of Marion, embracing The General Excavator Company and The Commercial Steel Casting Co. which had been operating as Osgood subsidiaries. The transaction was completed on the 29th of June. Preliminary operating arrangements aimed at strengthening the products, services, and facilities of all companies involved are being developed by the key personnel of both companies under the direction of John P. Courtright, president and general manager of both companies. He was elected president of The Osgood Co. in a reorganization meeting on the 1st of July. The Osgood Co. is continuing to function with its own separate personnel and is continuing to design and build machines under the Osgood-General name, for sale through the worldwide Osgood-General sales organization. Kenneth O. Williamson continues as Osgood-General sales manager for domestic sales. Export sales for Osgood-General are continuing under the supervision of F. W. Raab, Jr., who has headed the department in the past. No change has been made in the Marion sales organization.

White Motor Co., Exton, Pa., has just completed a program which gives its Autocar Division more than 150 sales, service, and parts outlets throughout the country, compared with only 56 outlets a year ago before White Motor acquired substantially all the assets of the Autocar Co. Autocar owners now have available to them more than 200 centers where their vehicles can be completely serviced. Over half of the more than 200 sales, parts, and service centers in operation now are connected with each other and with the home office by a teletype and teleprinter hook-up, thus assuring owners of a complete coordination of service operations at the factory level. Meantime, the Autocar Division's parts warehouse has been consolidated into a single floor, straight-line operation in a 60,000 square foot building at a new location in Philadelphia, Pa., formerly the Autocar Branch headquarters in that city.

It All Depends on the BUCKET

AT THE END OF THE LINE . . .

The bucket is usually less than one-tenth of the whole investment in your materials handling equipment. Yet, to get all the pay load you should on every pass depends more on the bucket than on anything else.

To be sure you have the right bucket for the job, let our field engineers look over your set-up. There's no charge, and their recommendations will help you get the most out of a major investment.

Write for BULLETIN 403, Dept. E94

FORMERLY ERIE STEEL CONSTRUCTION COMPANY

ERIE STRAYER Co.

SAME PEOPLE • SAME PRODUCTS • JUST A NEW NAME

994 GEIST ROAD • ERIE, PENNSYLVANIA

THE UNBEATABLE COMBINATION FOR Profit!
SUPER-HIGH OUTPUT HERE
SUPER-LOW MAINTENANCE HERE
GMC

IT'S YOURS IN THE Cedarapids Built by IOWA

SUPER TANDEM

ASK Super Tandem owners about Super Tandem performance! One contractor produced 3/4" minus material at a rate of 228 to 310 tons per hour with average percent of crush 20%. On this job, maintenance costs on the Super Tandem were less than three-fourths of a cent per yard! Figure out what this kind of low-cost production will mean on *your* jobs!

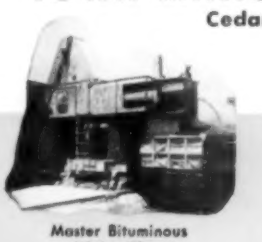
The Cedarapids Super Tandem is newly engineered for the extra high screening capacity that gives you a big advantage in any pit and is especially profitable where there is a high percent of fines or contaminated material.

Look over the features listed at the right, then ask your Cedarapids distributor to show you how you can apply them to your work for higher profits.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

CHECK THESE FEATURES

- ✓ Big 48" x 12' 2½ Deck Horizontal Vibrating Screen assures really high screening capacity, particularly desirable where gradation of a big volume of material is necessary.
- ✓ 2416 Roll Crusher and 1036 Jaw Crusher deliver a steady flow of crushed material.
- ✓ Flexibility with optional Swivel Feed Conveyor, Spray Bar attachments and Sand Ejector Screw to meet every job condition.
- ✓ Delivery conveyors, plant conveyor and under-crusher conveyor are 30" wide to handle the increased screening capacity of the plant.
- ✓ Quality construction of every unit cuts maintenance costs to the minimum, keeps plants operating all day every day to maintain your high production averages.


Master Bituminous Mixing Plant

Vibratory Soil Compactor

Motorized Head Pulley

Model G-60 6000-lb. Bituminous Mixing Plant

Why CAT* Motor Graders STOLE THE SHOW on the West Virginia Turnpike

IT TOOK a lot of heavy equipment to cut the West Virginia Turnpike out of 88 miles of mountain south of Charleston. Moving some 31,000,000 cubic yards of earth were over 1500 units of all kinds, involving scores of contractors. More than a dozen of these contractors had motor graders on the job—39 of them. *And 33 of the 39 were Caterpillar Motor Graders*—like the No. 12 pictured, helping finish one 5-mile section of the Turnpike for Oman Construction Co. of Nashville, Tenn.

There are any number of reasons for this overwhelming preference for the Cat Diesel Motor Grader.

For one, it's built and serviced entirely by one organization—engine, transmission, frame and circle assembly, and controls. It's carefully *balanced*—power with weight and speed. Its constant mesh transmission shifts easily and fast—in the case of the No. 12, through working speeds from 2.3 to 19.3 m.p.h.

The operator can call on a full range of blade positions without leaving the platform. His vision is not obstructed by either the blade-lift mechanism or the blade-lift gears. And he finds Caterpillar mechanical power controls act as fast as he wants them to on high-speed jobs.

Another point: your Caterpillar Dealer is always ready with prompt, genuine parts service. He'll be glad to show you in detail what makes this big yellow machine so popular. Ask for a demonstration today.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks ®

99% OF ALL CAT MOTOR GRADERS EVER BUILT ARE STILL IN USE